

Pkn3 Cas9-CKO Strategy

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Project Overview

Project Name

Pkn3

Project type

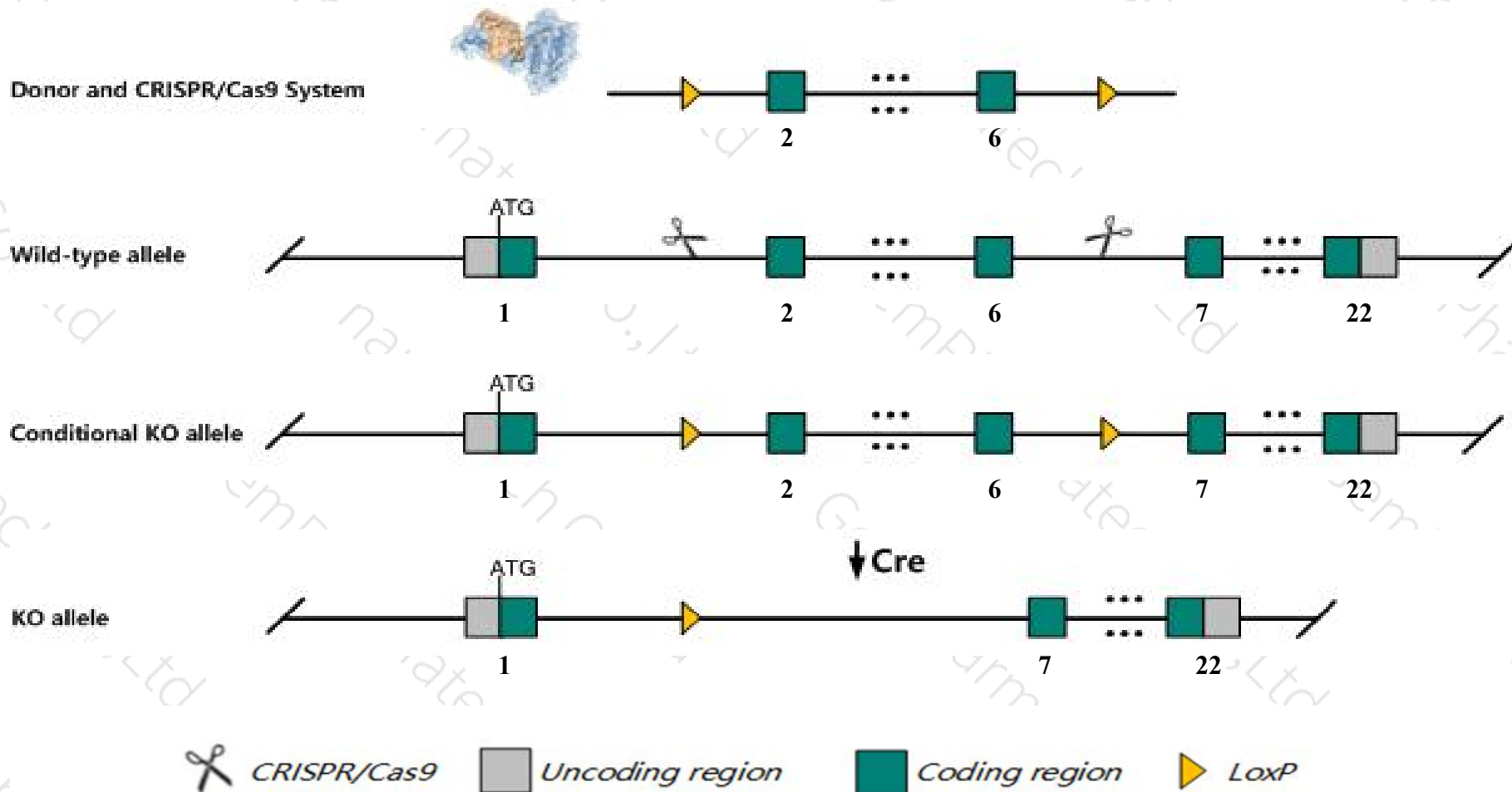
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pkn3* gene. The schematic diagram is as follows:



- The *Pkn3* gene has 8 transcripts. According to the structure of *Pkn3* gene, exon2-exon6 of *Pkn3-201* (ENSMUST00000045246.7) transcript is recommended as the knockout region. The region contains 799bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Pkn3* 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.

- According to the existing MGI data, mice homozygous for a null mutation are viable, fertile and healthy. mice with conditional loss of this gene and pten in hematopoietic cells show a delay in leukemia development.
- The *Pkn3* gene is located on 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Pkn3 protein kinase N3 [Mus musculus (house mouse)]

Gene ID: 263803, updated on 20-Mar-2020

Summary



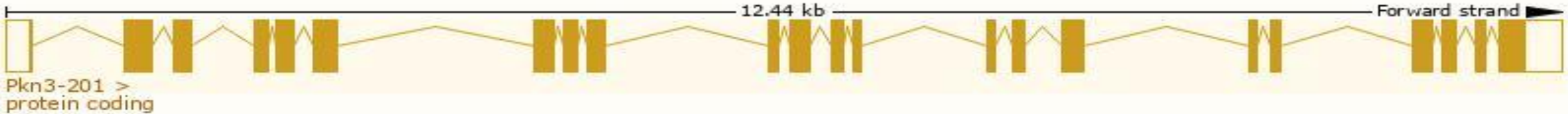
Official Symbol	Pkn3 provided by MGI
Official Full Name	protein kinase N3 provided by MGI
Primary source	MGI:MGI:2388285
See related	Ensembl:ENSMUSG00000026785
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AW209115, BC034126
Expression	Ubiquitous expression in lung adult (RPKM 8.5), subcutaneous fat pad adult (RPKM 6.3) and 24 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

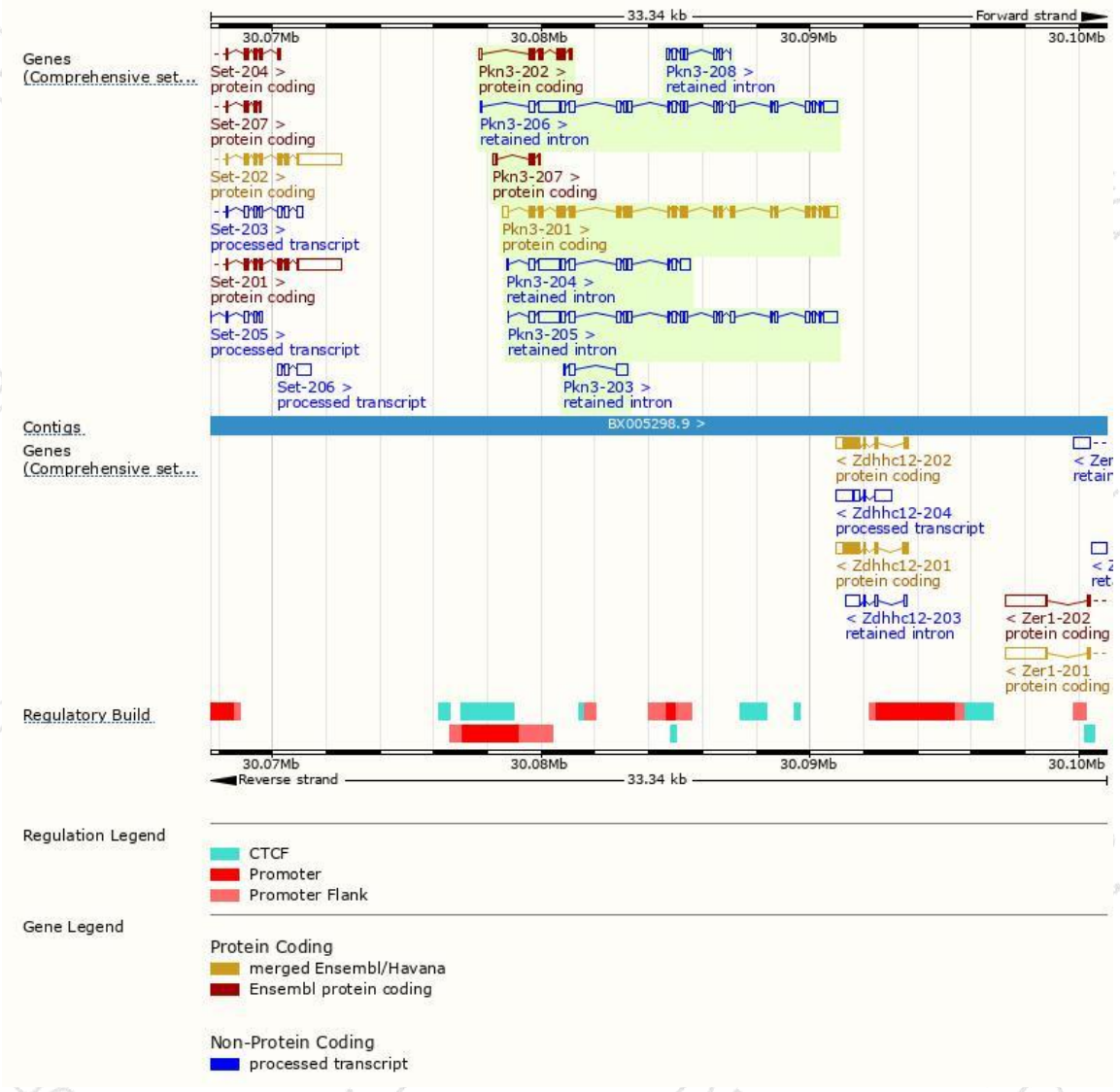
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pkn3-201	ENSMUST00000045246.7	3113	878aa	Protein coding	CCDS15867	Q8K045	TSL:1 GENCODE basic APPRIS P1
Pkn3-202	ENSMUST00000125346.7	804	238aa	Protein coding	-	A2BE96	CDS 3' incomplete TSL:3
Pkn3-207	ENSMUST00000150770.7	419	113aa	Protein coding	-	A2BE97	CDS 3' incomplete TSL:3
Pkn3-206	ENSMUST00000148650.7	3460	No protein	Retained intron	-	-	TSL:1
Pkn3-205	ENSMUST00000137240.7	3449	No protein	Retained intron	-	-	TSL:1
Pkn3-204	ENSMUST00000134591.7	2400	No protein	Retained intron	-	-	TSL:1
Pkn3-203	ENSMUST00000126838.1	623	No protein	Retained intron	-	-	TSL:3
Pkn3-208	ENSMUST00000156197.1	610	No protein	Retained intron	-	-	TSL:3

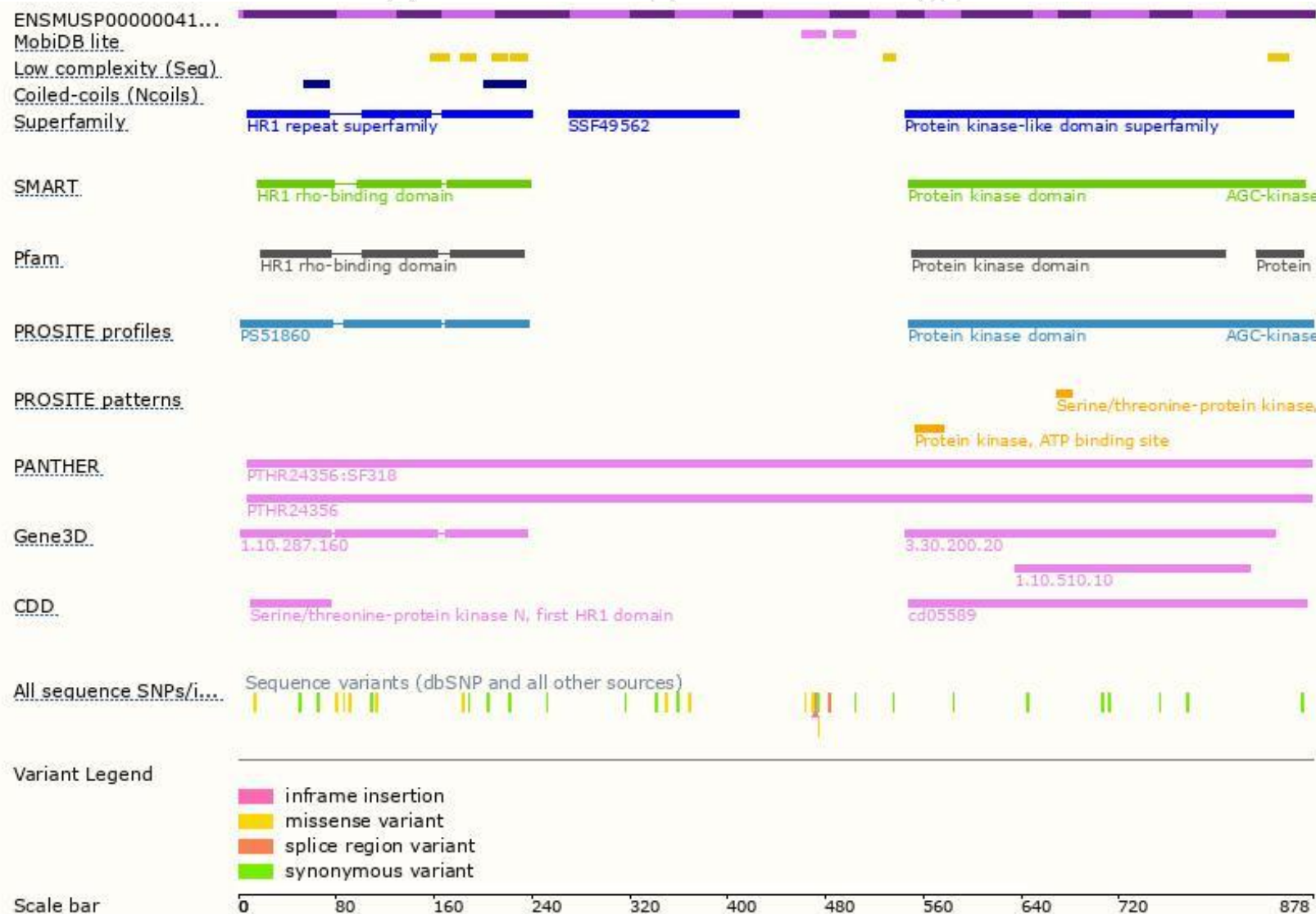
The strategy is based on the design of *Pkn3-201* transcript,the transcription is shown below:



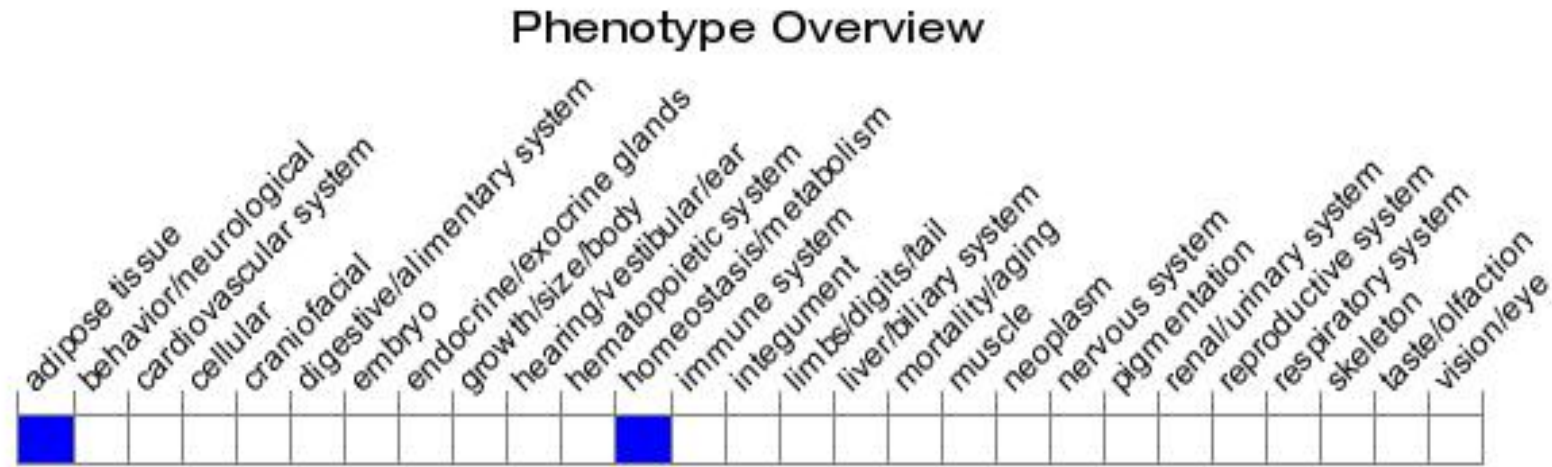
Genomic location distribution



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 null mutation are viable, fertile and healthy. Mice with conditional loss of this gene and Pten in hematopoietic cells show a delay in leukemia development.

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

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