Pkn1 Cas9-KO Strategy

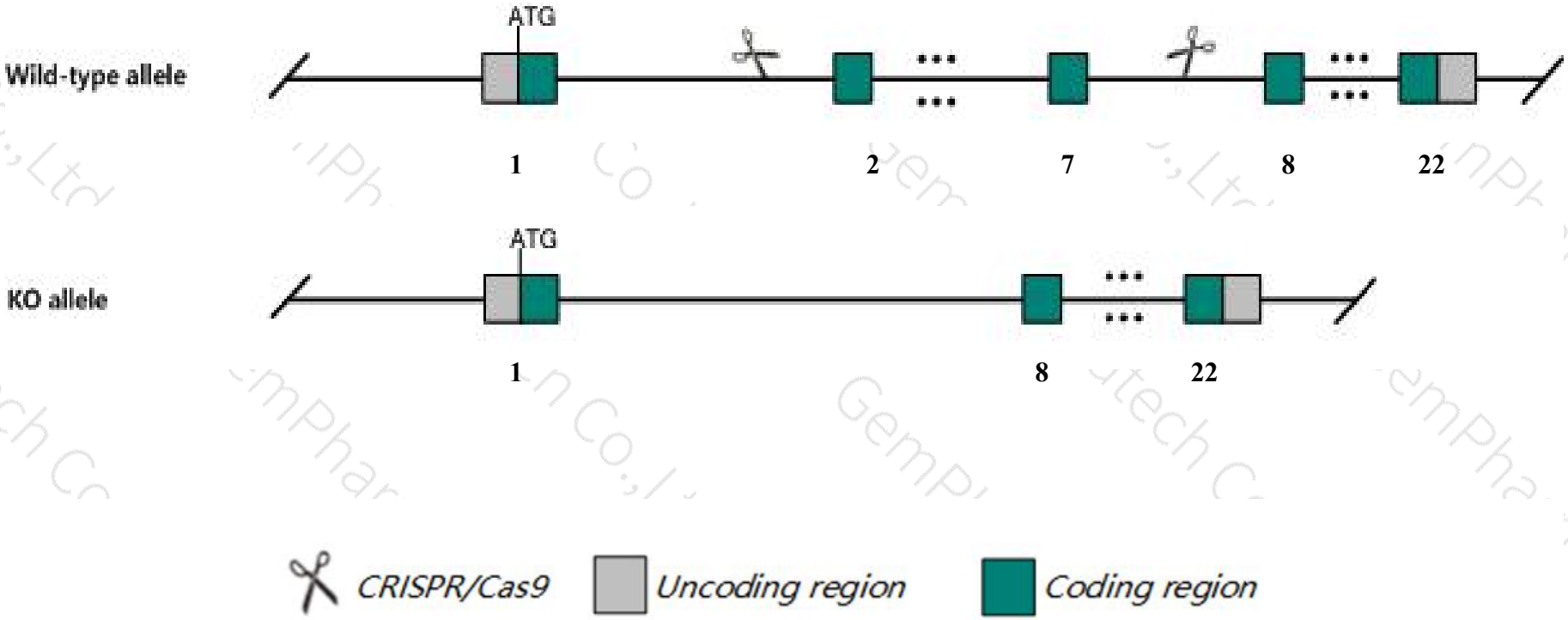
Designer:

Project Overview

Project Name	***Pkn1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pkn1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Pkn1* gene has 9 transcripts. According to the structure of *Pkn1* gene, exon2-exon7 of *Pkn1-208* (ENSMUST00000144258.7) transcript is recommended as the knockout region.The region contains 1153bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Pkn1* gene. The brief process is as follows: gRNA was transcribed in vitro.Cas9 and gRNA 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.

Notice

- According to the existing MGI data,Homozygotes for a null allele show spontaneous germinal center formation and autoantibody production and develop glomerulonephritis. Homozygotes for a different null allele have mild systolic and diastolic dysfunction, and show increased myocardial infarction size after ischemia-reperfusion injury.

- The *Pkn1* gene is located on the Chr8. 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 gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information（NCBI）

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Pkn1 protein kinase N1 [Mus musculus (house mouse)]

Gene ID: 320795, updated on 2-Mar-2019

Summary

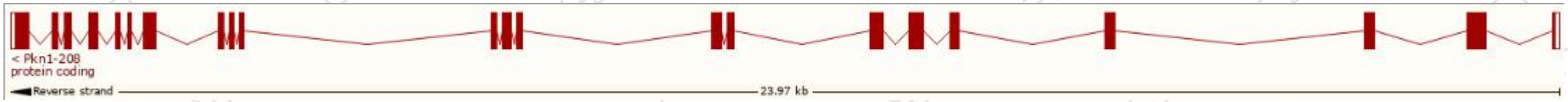
Official Symbol	Pkn1 provided by MGI
Official Full Name	protein kinase N1 provided by MGI
Primary source	MGI:MGI:108022
See related	Ensembl:ENSMUSG00000057672
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	DBK, F730027O18Rik, PAK1, PRK1, Pkn, Prkcl1, Stk3
Expression	Ubiquitous expression in thymus adult (RPKM 55.4), spleen adult (RPKM 49.1) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

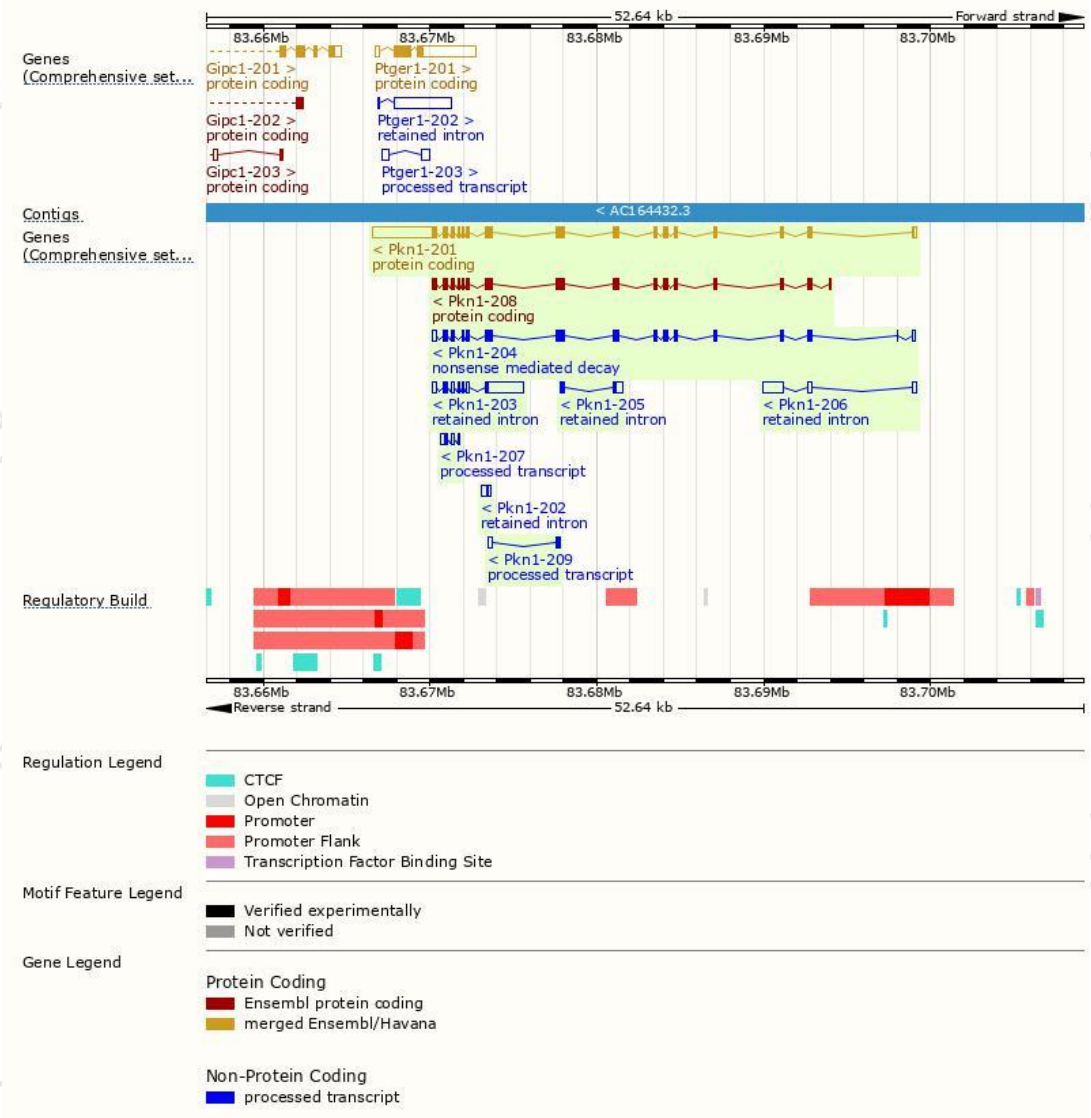
The gene has 9 transcript,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pkn1-201	ENSMUST00000005616.15	6662	946aa	Protein coding	CCDS22459	P70268	TSL:1 GENCODE basic APPRIS P3
Pkn1-208	ENSMUST00000144258.7	2995	951aa	Protein coding	CCDS57627	P70268	TSL:1 GENCODE basic APPRIS ALT1
Pkn1-204	ENSMUST00000132945.7	3005	796aa	Nonsense mediated decay	-	D6RH37	TSL:1
Pkn1-207	ENSMUST00000138898.1	548	No protein	Processed transcript	-	-	TSL:2
Pkn1-209	ENSMUST00000146057.1	450	No protein	Processed transcript	-	-	TSL:2
Pkn1-203	ENSMUST00000128523.7	3070	No protein	Retained intron	-	-	TSL:1
Pkn1-206	ENSMUST00000135356.1	1783	No protein	Retained intron	-	-	TSL:1
Pkn1-205	ENSMUST00000133195.1	694	No protein	Retained intron	-	-	TSL:3
Pkn1-202	ENSMUST00000124946.1	483	No protein	Retained intron	-	-	TSL:3

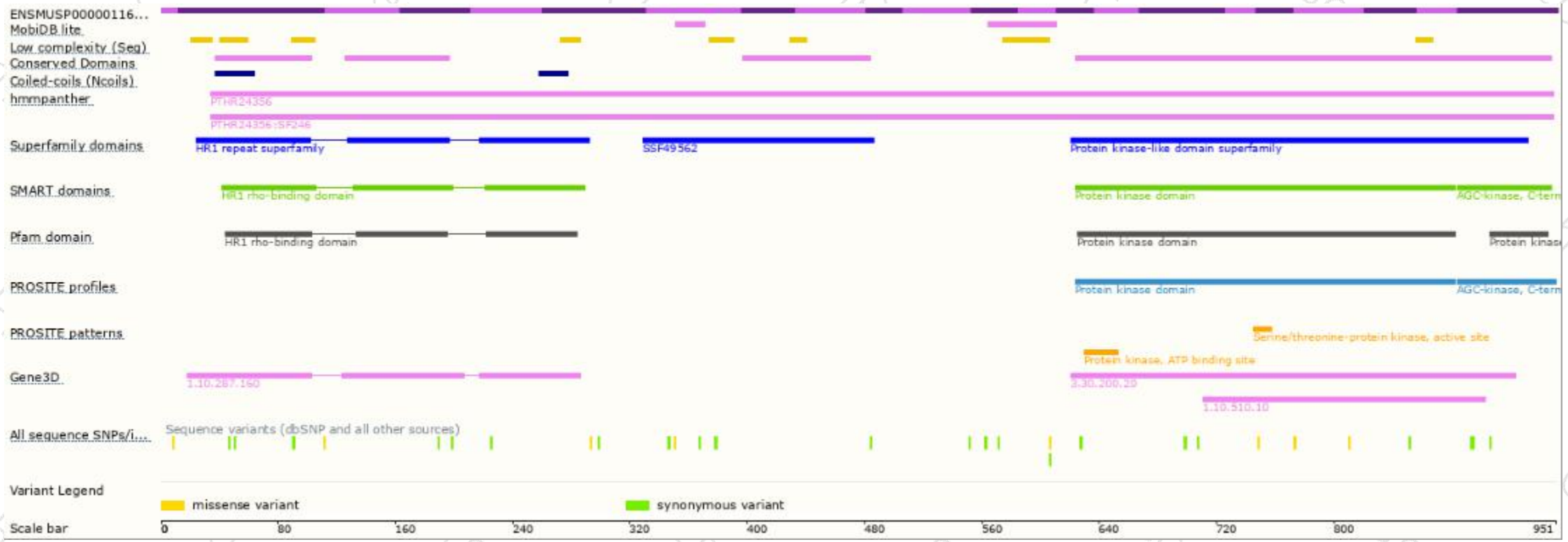
The strategy is based on the design of *Pkn1-208* transcript,The transcription is shown below



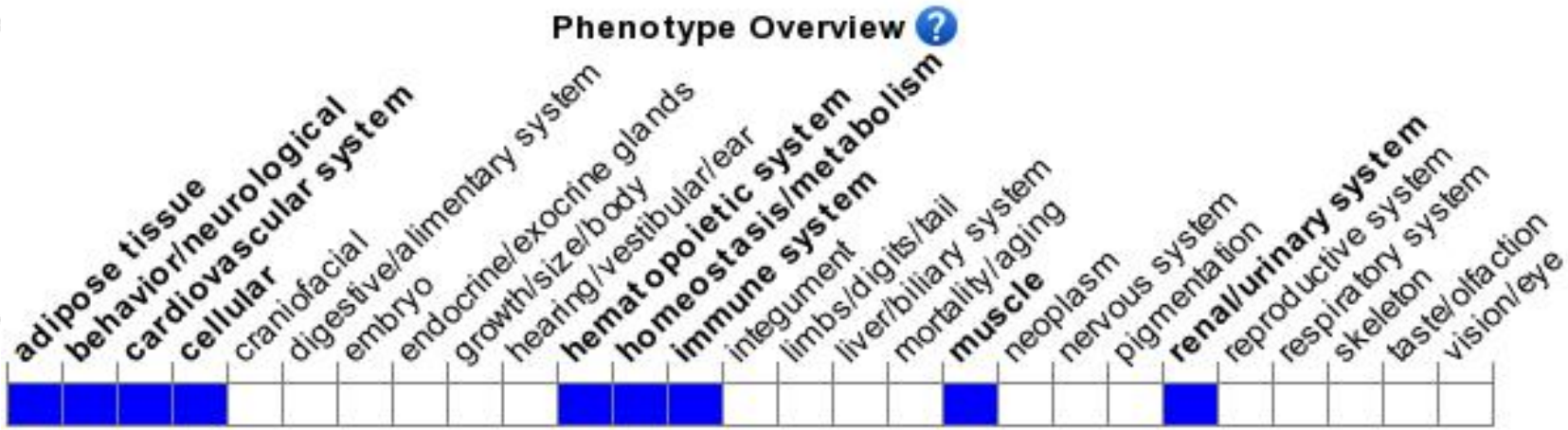
Genomic location distribution



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/).

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

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