Prkcz Cas9-KO Strategy

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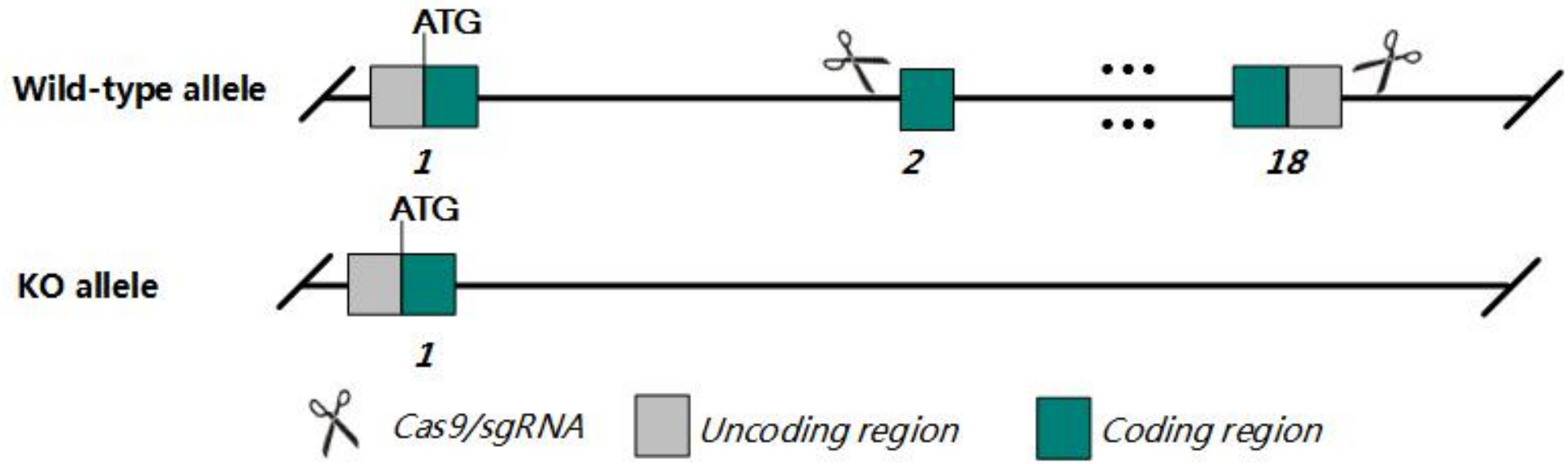
Design Date:2019-8-12

Project Overview

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

Knockout strategy

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



Technical routes

➢ The *Prkcz* gene has 10 transcripts. According to the structure of *Prkcz* gene, exon2-exon18 of *Prkcz-201* (ENSMUST00000030922.14) transcript is recommended as the knockout region.The region contains most of the coding sequence.Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Prkcz* 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,Young, not mature, homozygous null mice have reduced B cell numbers and abnormal secondary lymph organ structure. Young mice have fewer Peyers patches, poor delineation of B & T cell zones, and fewer follicles of small size. Spleens have less prominent B cell follicles and abnormal marginal zones.

➢ The *Prkcz* gene is located on the Chr4. 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 gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information（NCBI）

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Prkcz protein kinase C, zeta [Mus musculus (house mouse)]

Gene ID: 18762, updated on 19-Mar-2019

Summary

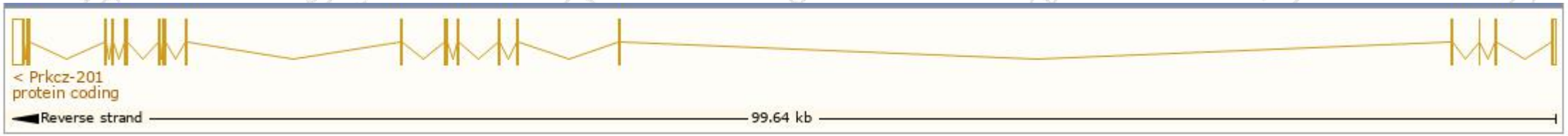
Official Symbol	Prkcz provided by MGI
Official Full Name	protein kinase C, zeta provided by MGI
Primary source	MGI:MGI:97602
See related	Ensembl:ENSMUSG00000029053
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI098070, C80388, Pkcz, R74924, aPKCzeta, nPKC-zeta, zetaPKC
Expression	Broad expression in cortex adult (RPKM 34.2), cerebellum adult (RPKM 31.5) and 19 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

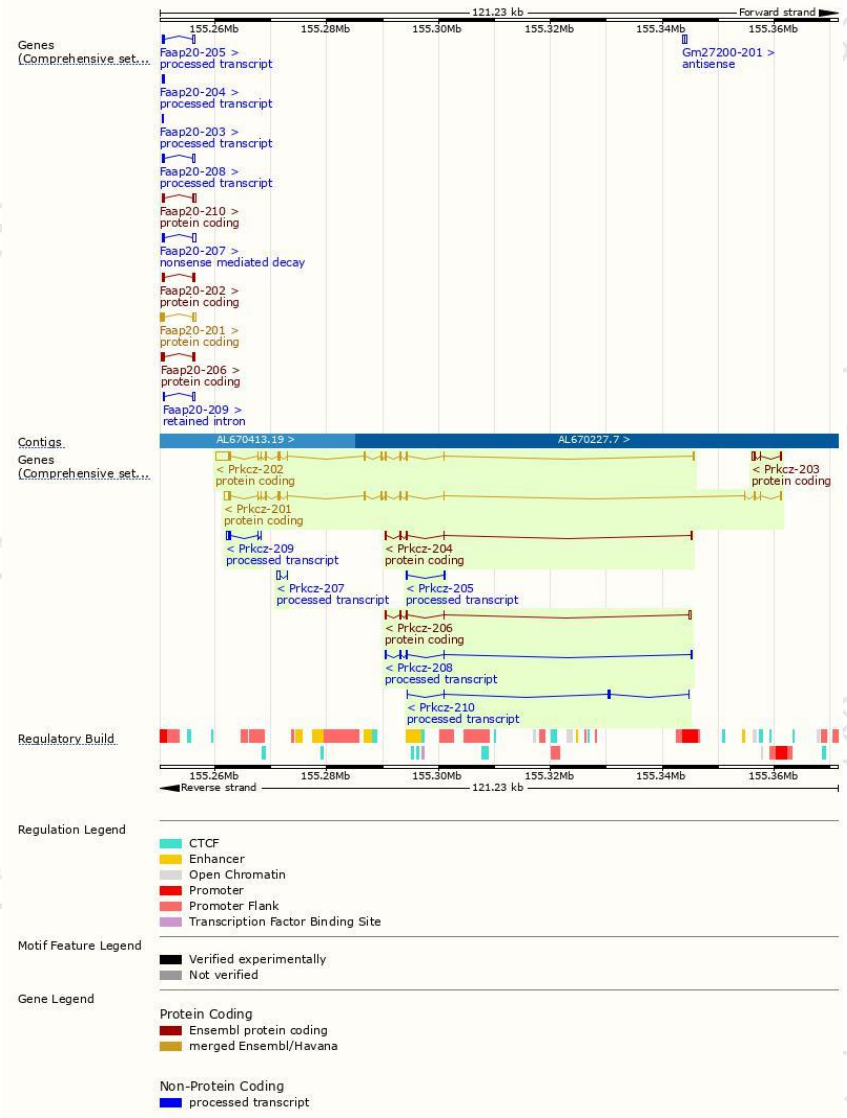
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Prkcz-202	ENSMUST00000103178.10	4083	409aa	Protein coding	CCDS19027	Q02956 Q3V341	TSL:1 GENCODE basic
Prkcz-201	ENSMUST00000030922.14	2641	592aa	Protein coding	CCDS19026	Q02956	TSL:1 GENCODE basic APPRIS P1
Prkcz-206	ENSMUST00000131975.7	837	121aa	Protein coding	-	A2AD74	CDS 3' incomplete TSL:3
Prkcz-203	ENSMUST00000105624.1	694	96aa	Protein coding	-	A2AD75	TSL:1 GENCODE basic
Prkcz-204	ENSMUST00000123652.7	586	46aa	Protein coding	-	A2AD72	CDS 3' incomplete TSL:2
Prkcz-209	ENSMUST00000140256.1	790	No protein	Processed transcript	-	-	TSL:2
Prkcz-207	ENSMUST00000135699.1	574	No protein	Processed transcript	-	-	TSL:3
Prkcz-208	ENSMUST00000139647.7	500	No protein	Processed transcript	-	-	TSL:5
Prkcz-210	ENSMUST00000145373.1	430	No protein	Processed transcript	-	-	TSL:3
Prkcz-205	ENSMUST00000125320.1	363	No protein	Processed transcript	-	-	TSL:1

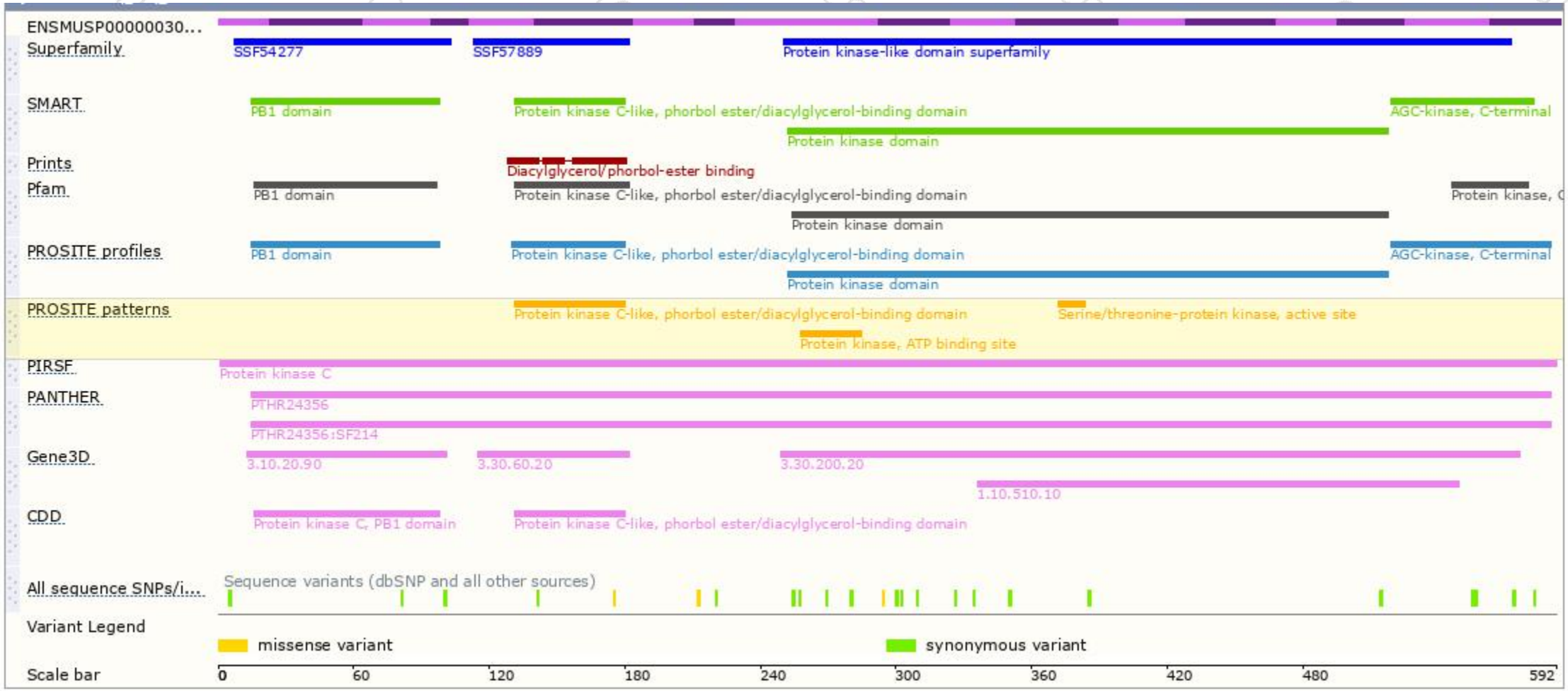
The strategy is based on the design of *Prkcz-201* transcript,The transcription is shown below



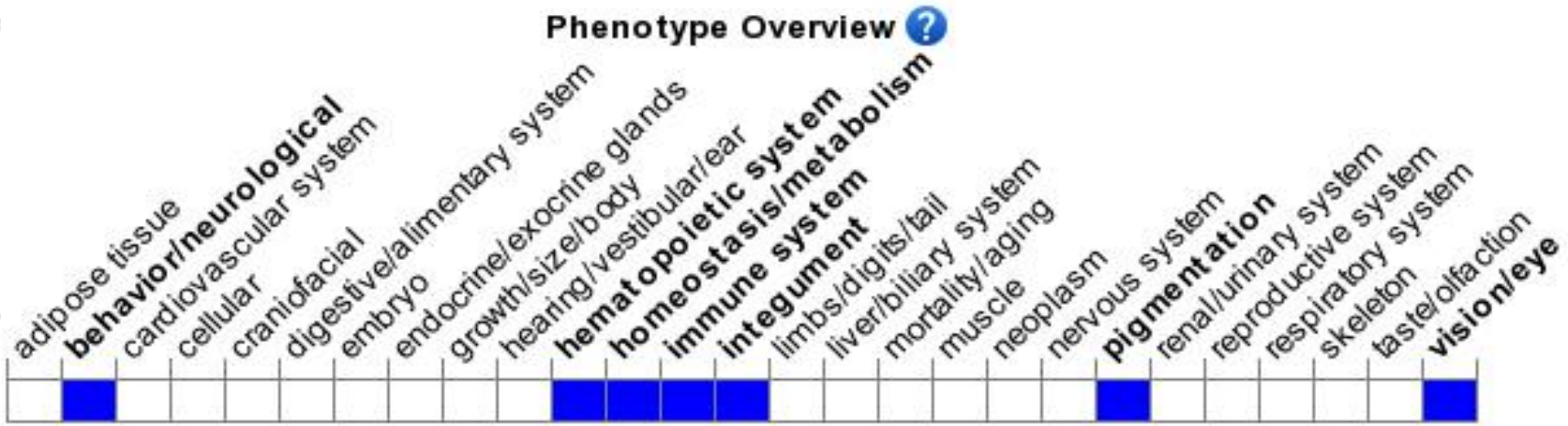
Genomic location distribution



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/).

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

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