

Prkd1 Cas9-KO Strategy

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Reviewer

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Project Overview

Project Name

Prkd1

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Prkd1* gene. The schematic diagram is as follows:



- The *Prkd1* gene has 1 transcript. According to the structure of *Prkd1* gene, exon3-exon5 of *Prkd1-201* (ENSMUST00000002765.8) transcript is recommended as the knockout region. The region contains 317bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Prkd1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, mice homozygous for a knock-out allele exhibit partial embryonic lethality. Mice homozygous for a knock-in allele display partial embryonic and perinatal lethality.
- The *Prkd1* gene is located on the Chr12. 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)

Prkd1 protein kinase D1 [*Mus musculus* (house mouse)]

Gene ID: 18760, updated on 12-Aug-2019

Summary

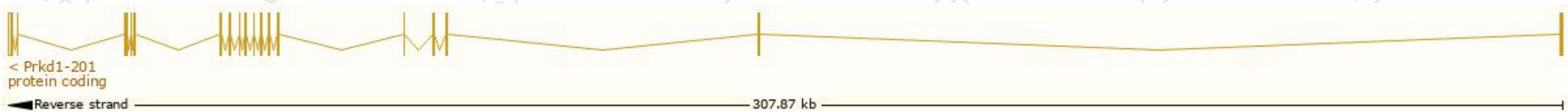
Official Symbol	Prkd1 provided by MGI
Official Full Name	protein kinase D1 provided by MGI
Primary source	MGI:MGI:99879
See related	Ensembl:ENSMUSG000000002688
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	PKD; PKD1; Pkcm; Prkcm
Expression	Ubiquitous expression in genital fat pad adult (RPKM 3.1), subcutaneous fat pad adult (RPKM 2.4) and 26 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

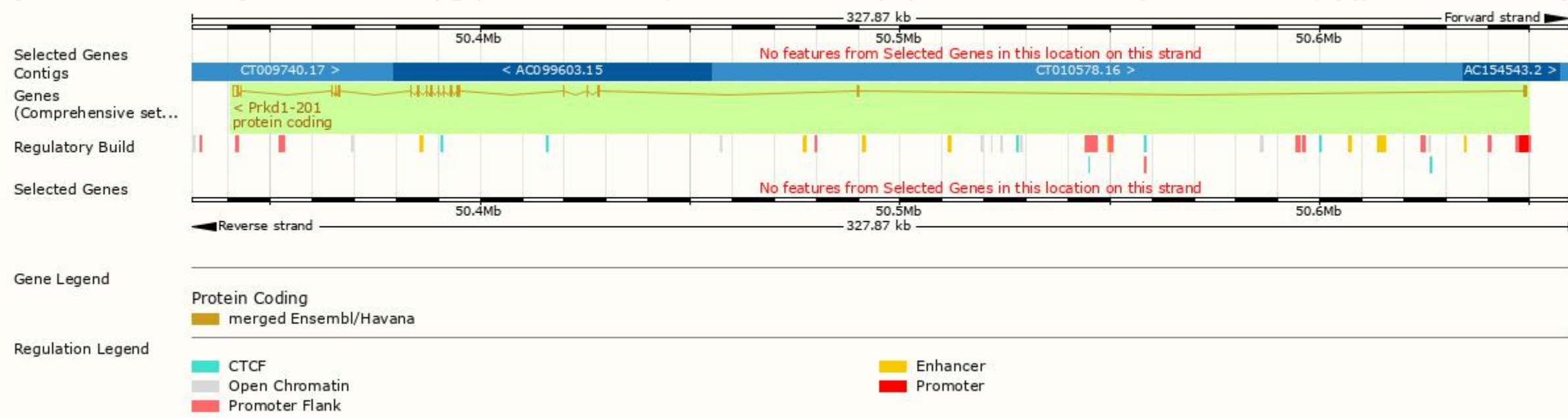
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Prkd1-201	ENSMUST00000002765.8	3653	918aa	Protein coding	CCDS49059	Q62101	TSL:1 GENCODE basic APPRIS P1

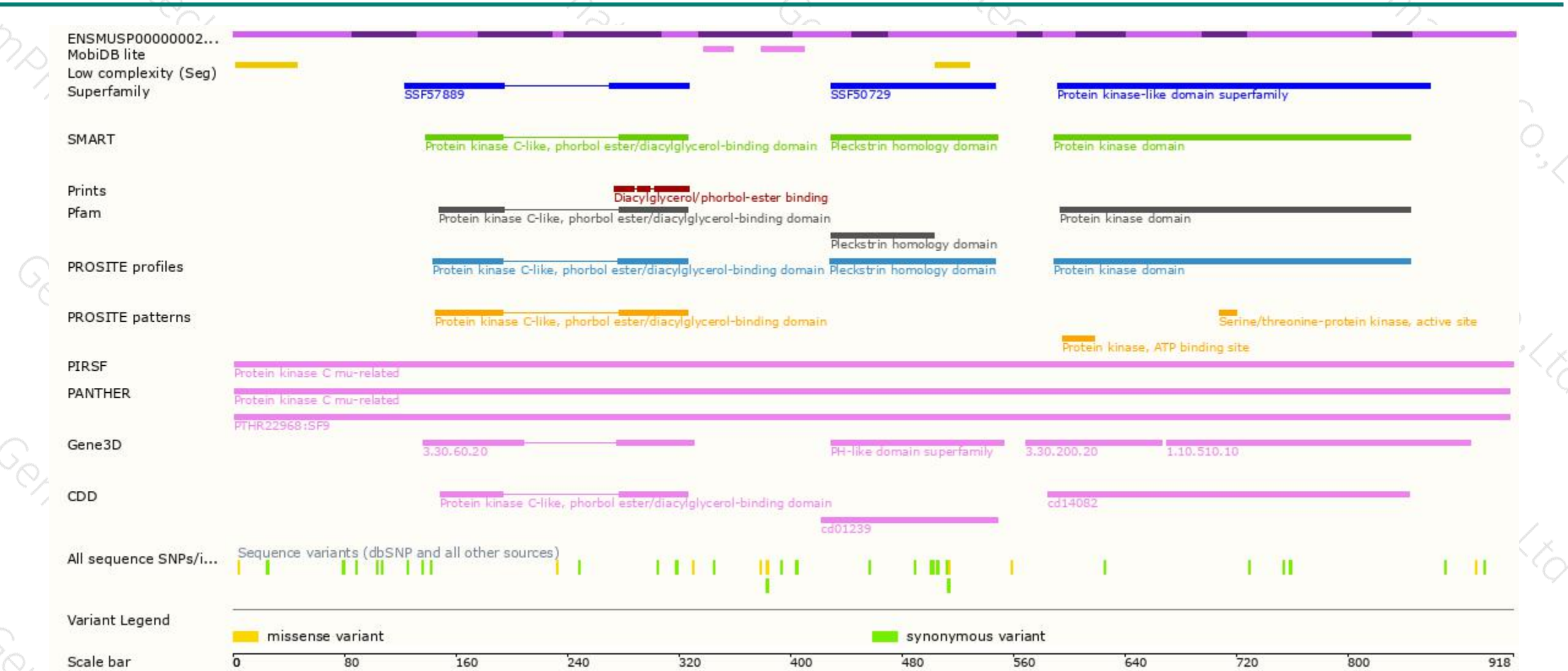
The strategy is based on the design of *Prkd1-201* transcript, the transcription is shown below



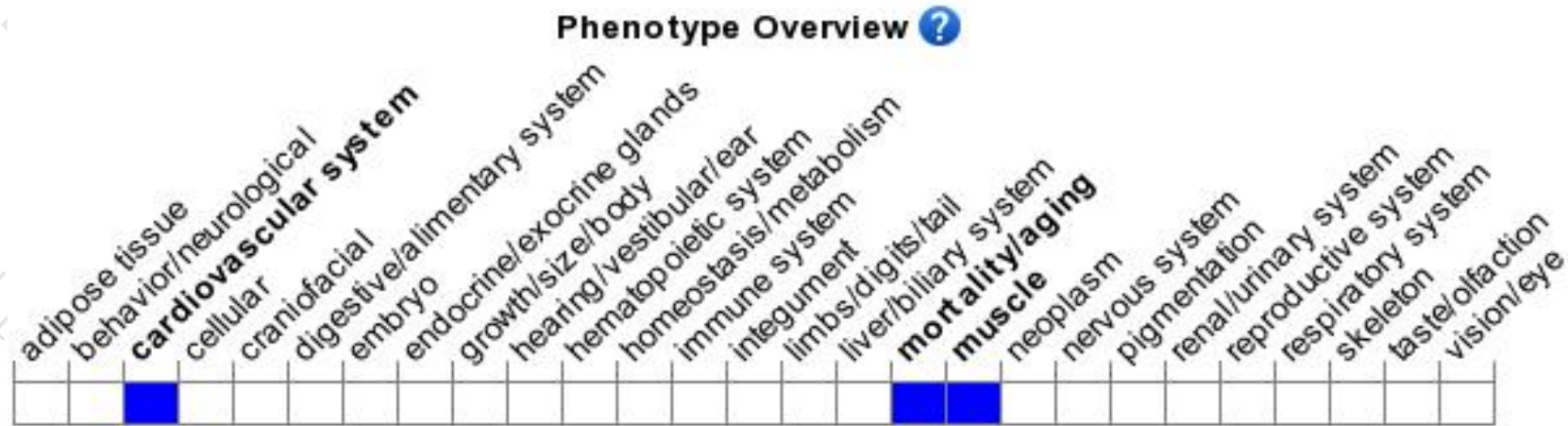
Genomic location distribution



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 partial embryonic lethality. Mice homozygous for a knock-in allele display partial embryonic and perinatal lethality.

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

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