Prdm6 Cas9-KO Strategy

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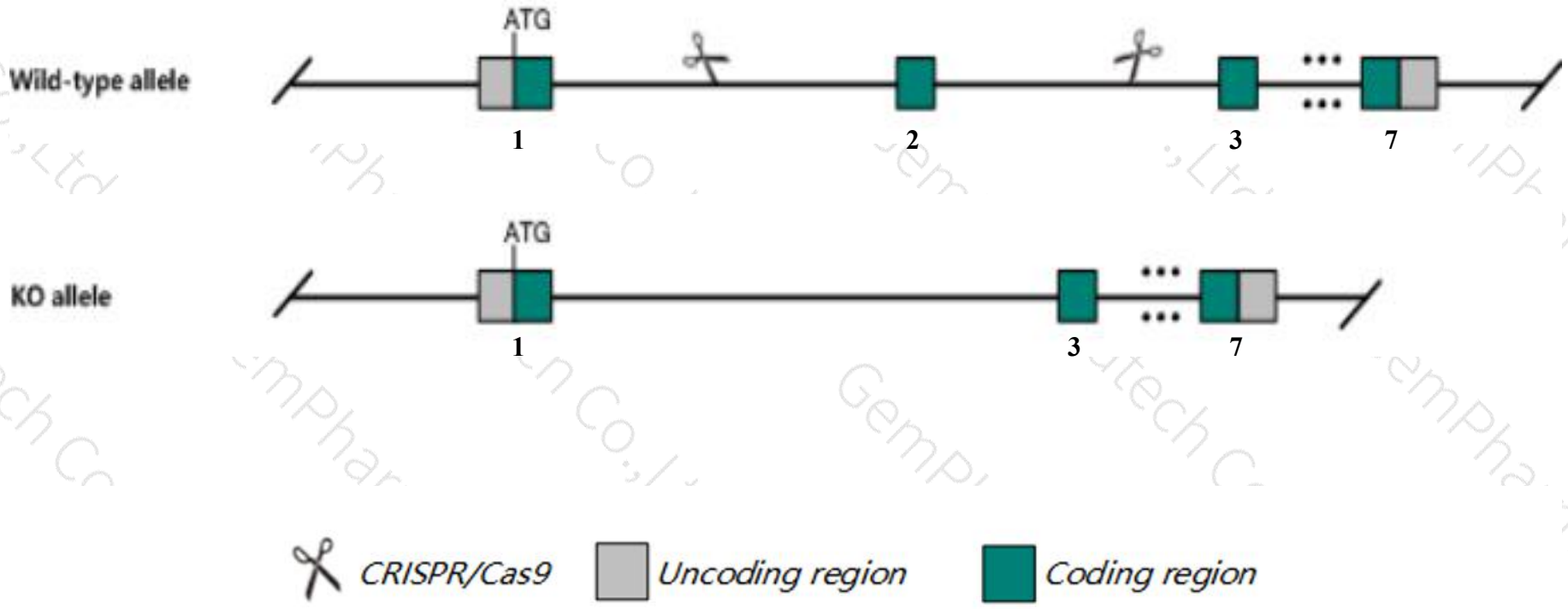
Design Date: 2020-4-26

Project Overview

Project Name	***Prdm6***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Prdm6* gene. The schematic diagram is as follows:



Technical routes

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- The *Prdm6* gene has 5 transcripts. According to the structure of *Prdm6* gene, exon2 of *Prdm6-201* (ENSMUST00000091900.10) transcript is recommended as the knockout region.The region contains 308bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Prdm6* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,mice homozygous for a knock-out allele exhibit cardiovascular development defects.
- The effect on transcript *Prdm6*-205 is unknown.
- Transcript *Prdm6*-202&204 may not be affected.
- The N-terminal of *Prdm6* gene will remain several amino acids ,it may remain the partial function of *Prdm6* gene.
- The *Prdm6* gene is located on the Chr18. 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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Prdm6 PR domain containing 6 [Mus musculus (house mouse)]

Gene ID: 225518, updated on 13-Mar-2020

Summary

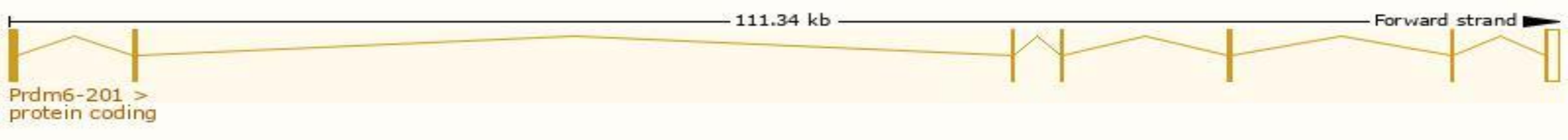
Official Symbol	Prdm6 provided by MGI
Official Full Name	PR domain containing 6 provided byMGI
Primary source	MGI:MGI:2684938
See related	Ensembl:ENSMUSG00000069378
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Gm92, PRISM
Expression	Biased expression in lung adult (RPKM 4.6), bladder adult (RPKM 3.1) and 9 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

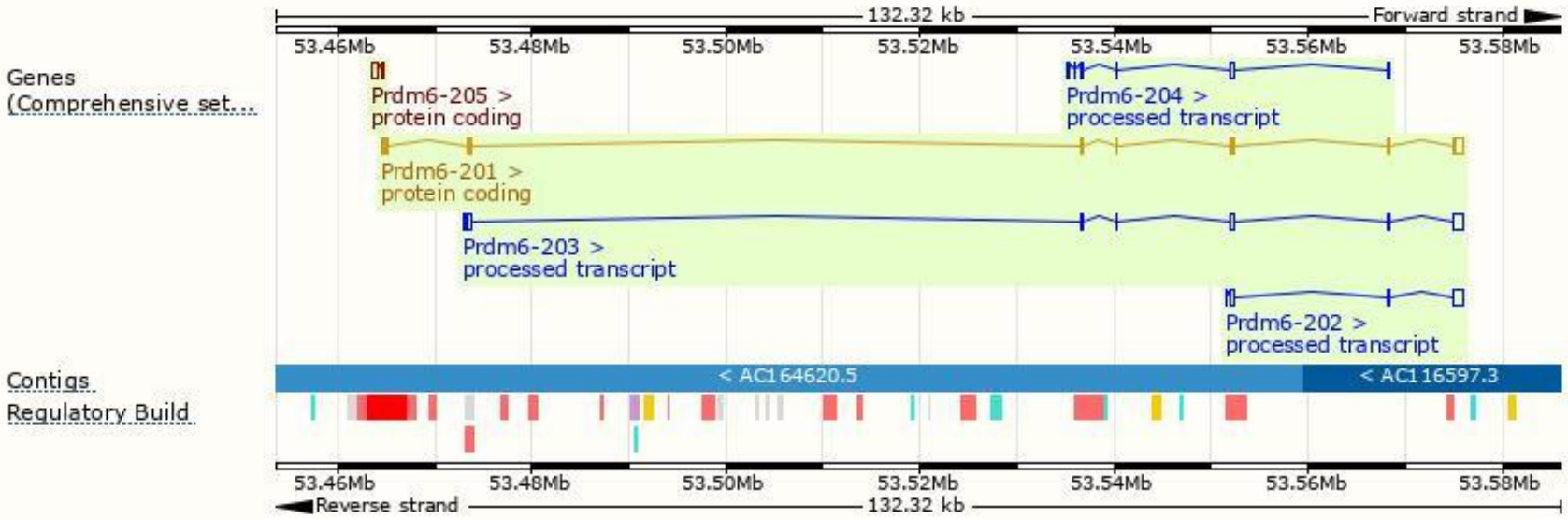
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Prdm6-201	ENSMUST00000091900.10	2631	596aa	Protein coding	CCDS29253	Q3UZD5	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1
Prdm6-205	ENSMUST00000236096.1	662	60aa	Protein coding	-	A0A494BAI6	CDS 3' incomplete
Prdm6-203	ENSMUST00000115399.7	2227	No protein	Processed transcript	-	-	TSL:1
Prdm6-202	ENSMUST00000115398.1	1474	No protein	Processed transcript	-	-	TSL:1
Prdm6-204	ENSMUST00000154557.8	797	No protein	Processed transcript	-	-	TSL:1

The strategy is based on the design of *Prdm6-201* transcript,the transcription is shown below:



Genomic location distribution



Regulation Legend

- CTCF
- Enhancer
- Open Chromatin
- Promoter
- Promoter Flank
- Transcription Factor Binding Site

Gene Legend

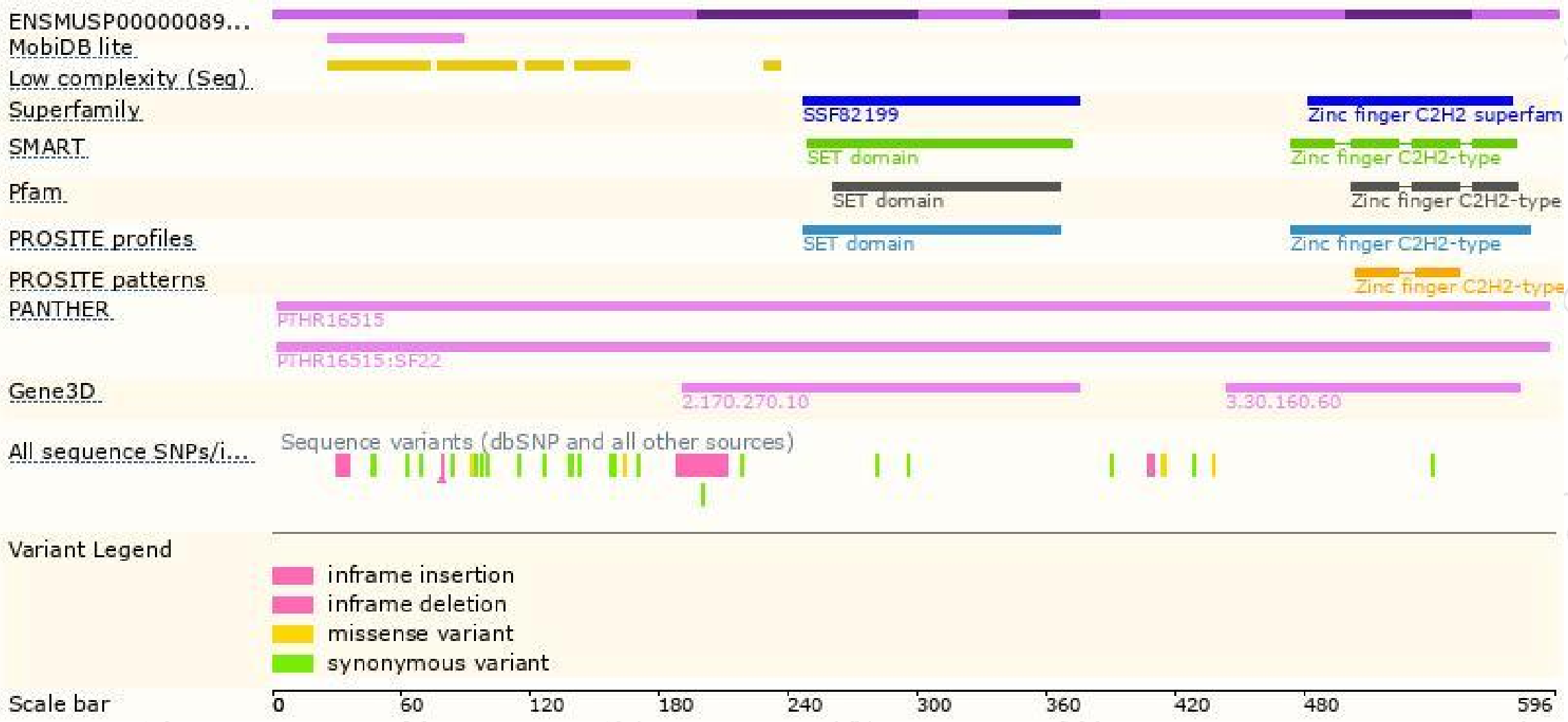
Protein Coding

- merged Ensembl/Havana
- Ensembl protein coding

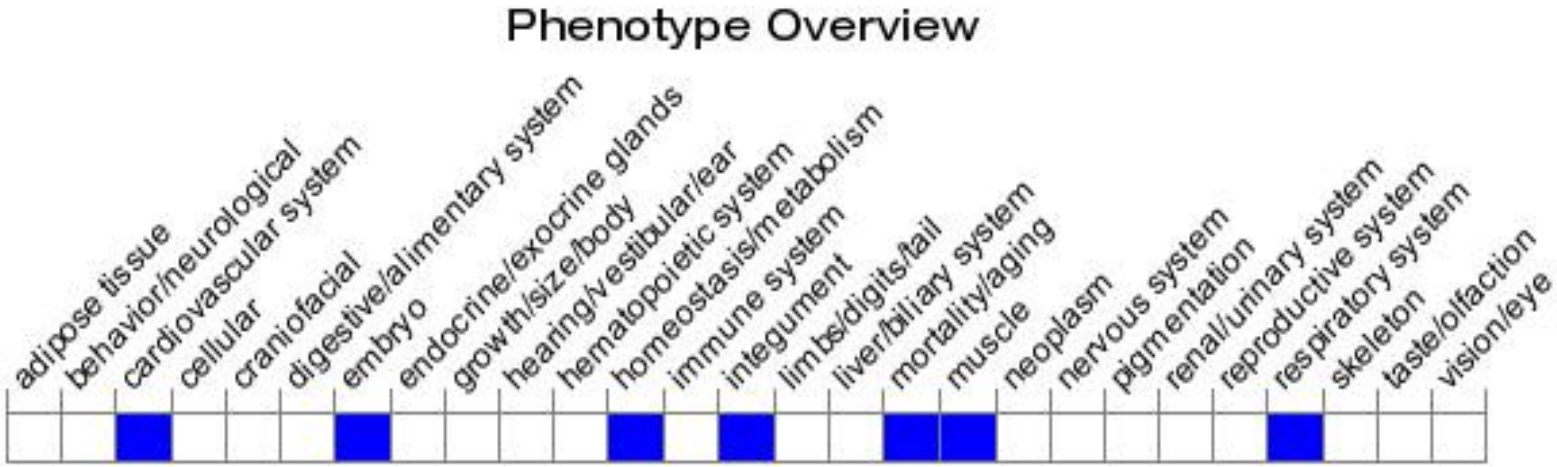
Non-Protein Coding

- processed transcript

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 cardiovascular development defects.

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