Ppm1b Cas9-KO Strategy

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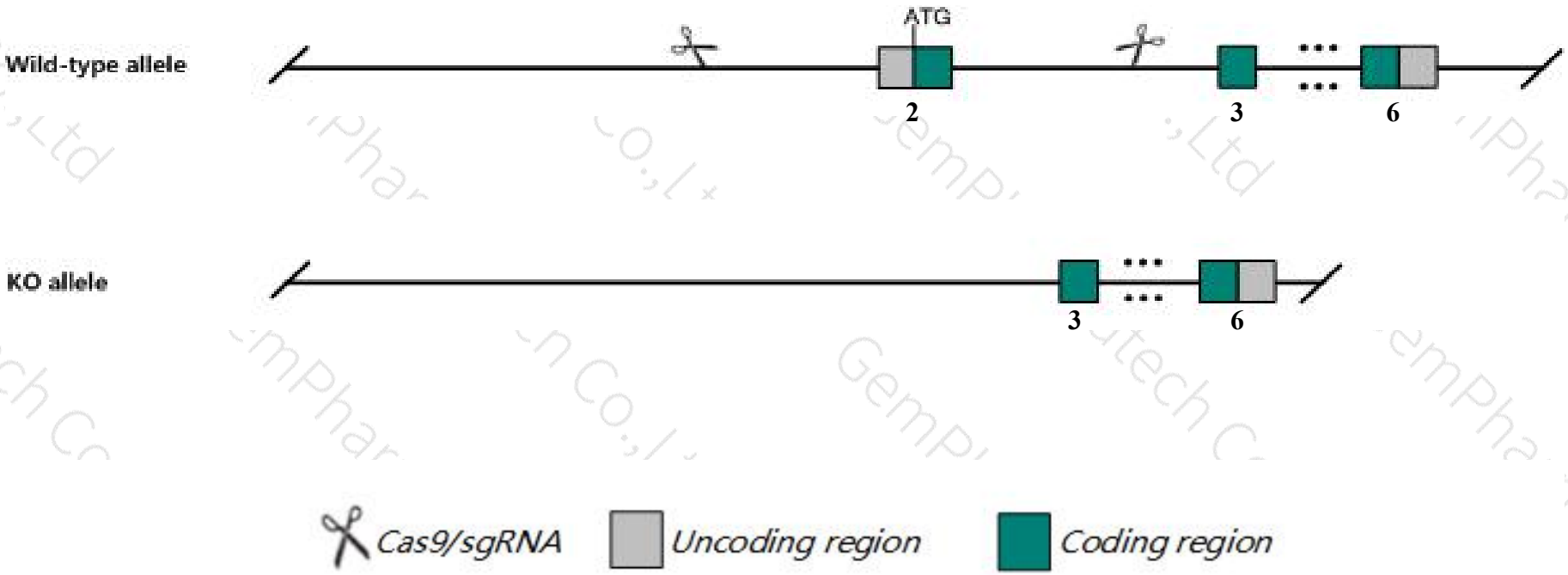
Project Overview

Project Name	***Ppm1b***
Project type	**Cas9-KO**
Strain background	**C57BL/6J**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ppm1b* gene. The schematic diagram is as follows:



Technical routes

- The *Ppm1b* gene has 8 transcripts. According to the structure of *Ppm1b* gene, exon2 of *Ppm1b-202* (ENSMUST00000112304.9) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Ppm1b* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

Notice

- According to the existing MGI data,Homozygous KO results in early pre-implantation lethality. A hypomorphic mutation results in increased sensitivity to Tnf-induced necroptosis and early death.

- This strategy knockout ATG and there is a risk of identifying new ATGs that form unknown proteins.

- The *Ppm1b* gene is located on the Chr17. 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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Ppm1b protein phosphatase 1B, magnesium dependent, beta isoform [Mus musculus (house mouse)]

Gene ID: 19043, updated on 31-Jan-2019

Summary

Official Symbol	Ppm1b provided by MGI
Official Full Name	protein phosphatase 1B, magnesium dependent, beta isoform provided by MGI
Primary source	MGI:MGI:101841
See related	Ensembl:ENSMUSG00000061130
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	PP2CB
Expression	Ubiquitous expression in testis adult (RPKM 20.4), cerebellum adult (RPKM 16.6) and 28 other tissues See more
Orthologs	human all

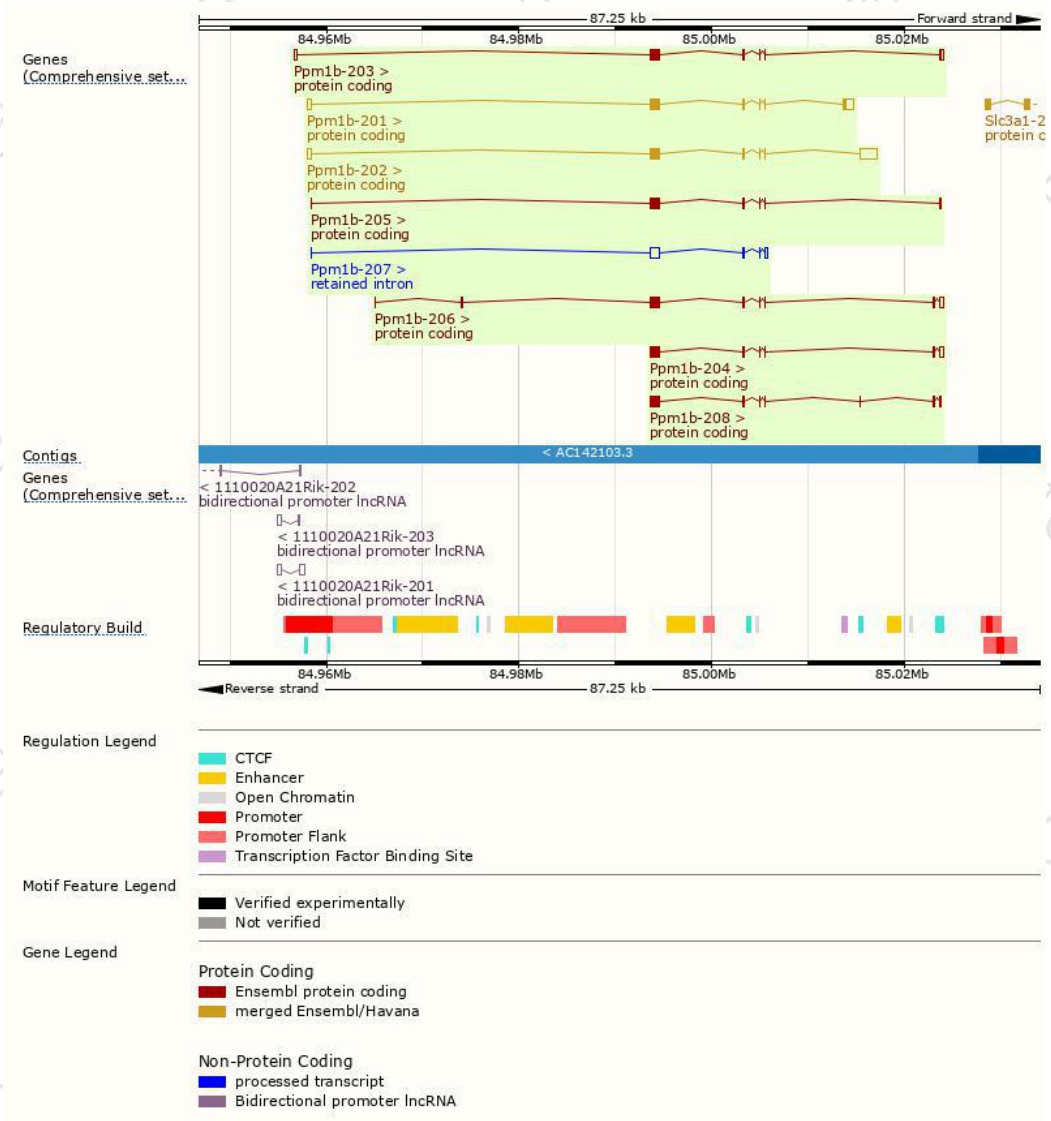
Transcript information（Ensembl）

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

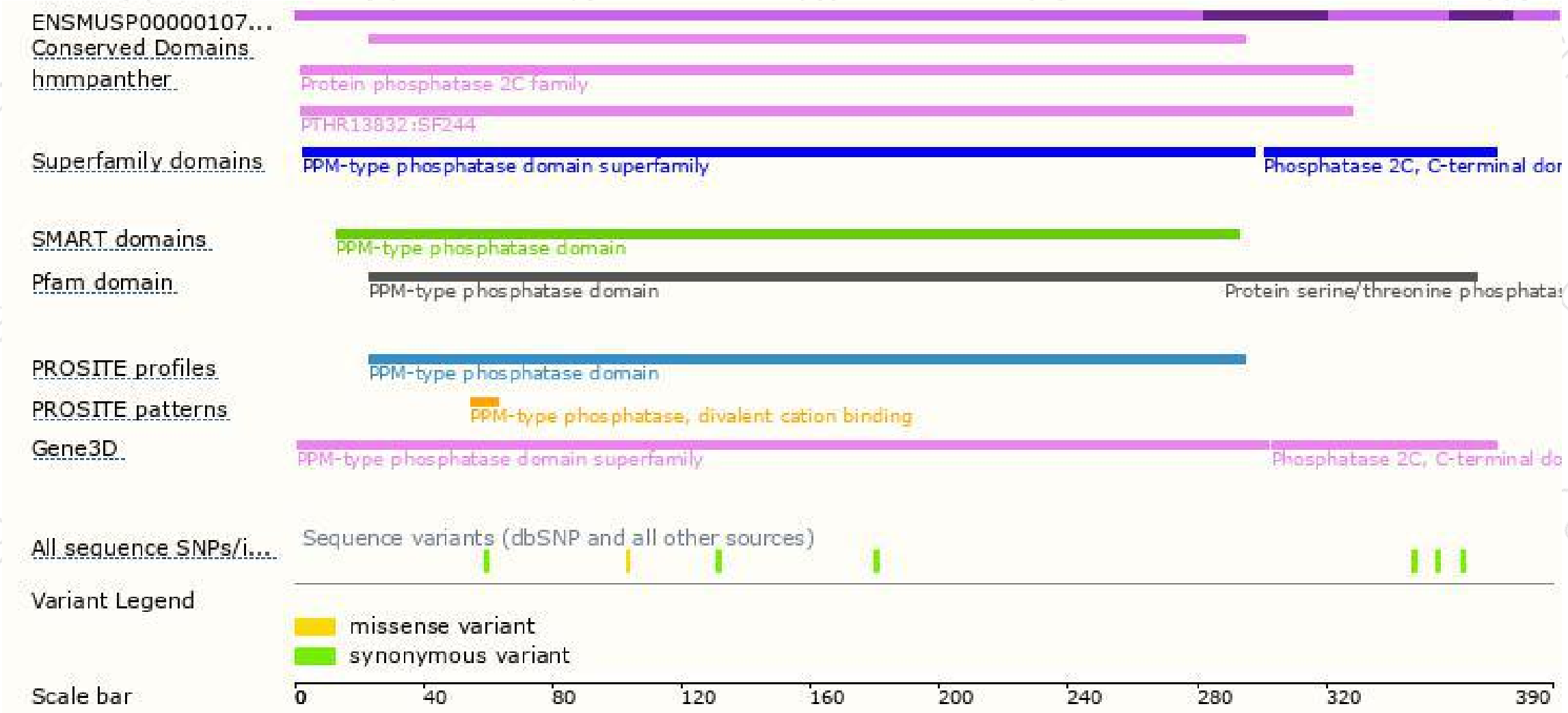
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ppm1b-202	ENSMUST00000112304.9	3323	390aa	Protein coding	CCDS37710	P36993 Q546R1	TSL:1 GENCODE basic APPRIS P3
Ppm1b-201	ENSMUST00000080217.13	2670	477aa	Protein coding	CCDS50199	Q99NF7	TSL:1 GENCODE basic APPRIS ALT2
Ppm1b-206	ENSMUST00000234540.1	1633	393aa	Protein coding	CCDS50200	-	GENCODE basic APPRIS ALT2
Ppm1b-203	ENSMUST00000112305.9	1591	390aa	Protein coding	CCDS50201	P36993	TSL:1 GENCODE basic APPRIS ALT2
Ppm1b-204	ENSMUST00000112307.3	1499	393aa	Protein coding	CCDS50200	P36993	TSL:1 GENCODE basic APPRIS ALT2
Ppm1b-205	ENSMUST00000234332.1	1290	390aa	Protein coding	CCDS50201	-	GENCODE basic APPRIS ALT2
Ppm1b-208	ENSMUST00000234851.1	1307	402aa	Protein coding	-	-	GENCODE basic APPRIS ALT2
Ppm1b-207	ENSMUST00000234710.1	1320	No protein	Retained intron	-	-	

The strategy is based on the design of *Ppm1b-202* transcript,The transcription is shown below

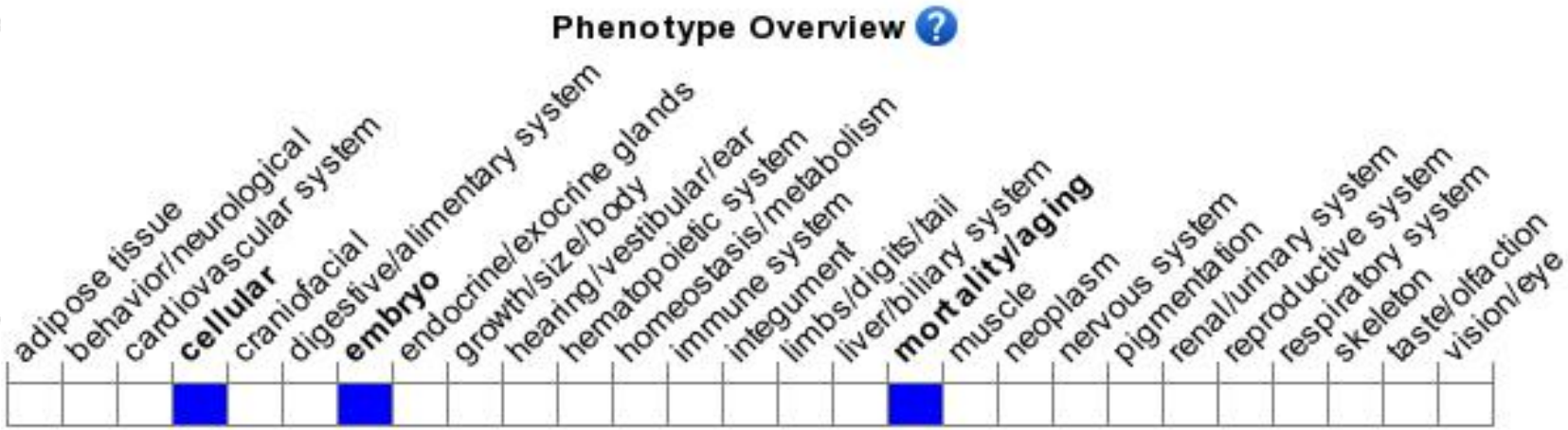
Genomic location distribution



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,Homozygous KO results in early pre-implantation lethality. A hypomorphic mutation results in increased sensitivity to Tnf-induced necroptosis and early death.

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

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