

Pde7b Cas9-CKO Strategy

Designer: Xueting Zhang

Reviewer: Yanhua Shen

Date: 2020-02-19

Project Overview

Project Name

Pde7b

Project type

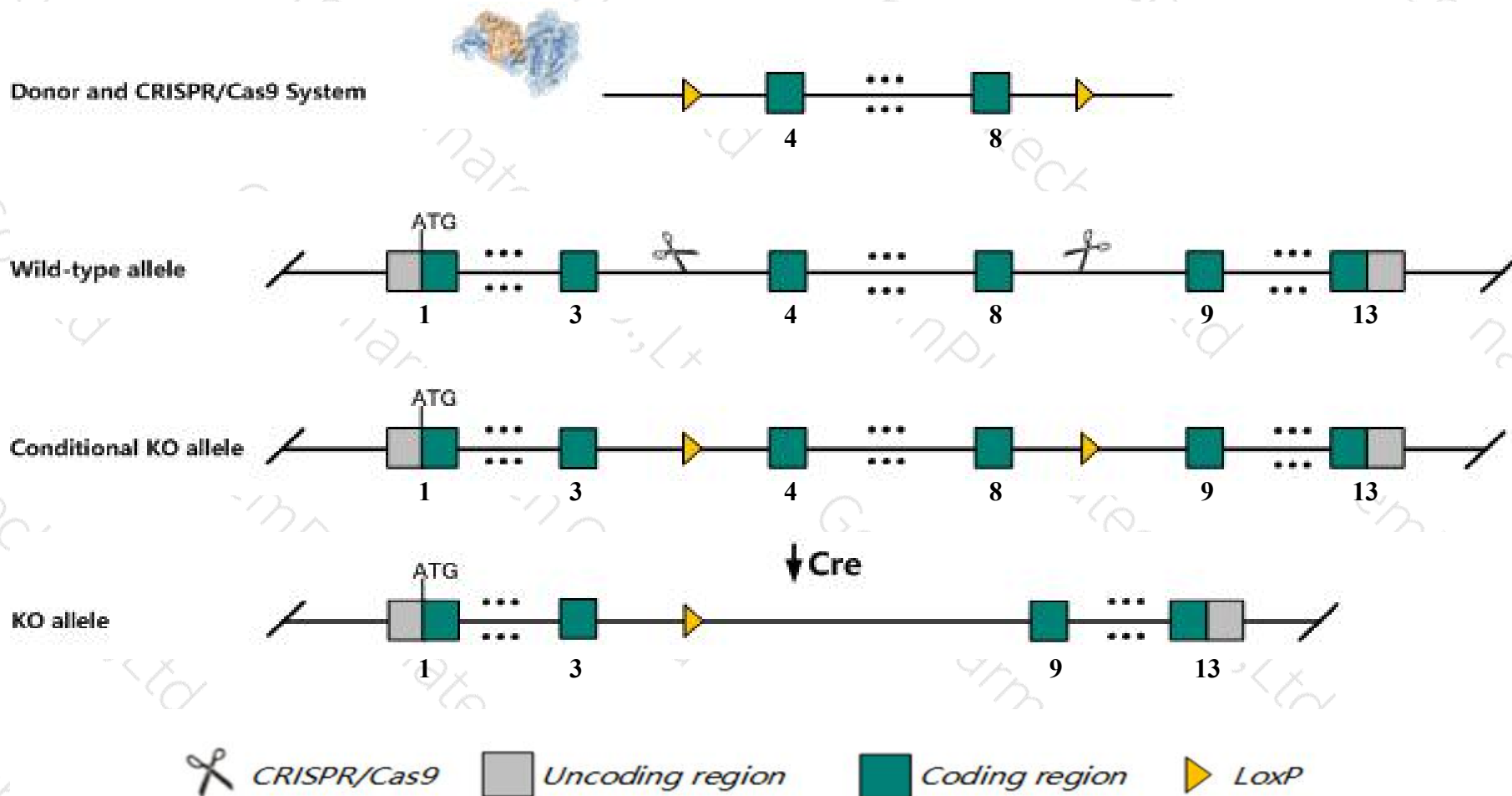
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pde7b* gene. The schematic diagram is as follows:



- The *Pde7b* gene has 8 transcripts. According to the structure of *Pde7b* gene, exon4-exon8 of *Pde7b*-201 (ENSMUST00000020165.13) transcript is recommended as the knockout region. The region contains 545bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Pde7b* gene. The brief process is as follows: CRISPR/Cas9 system and Donor 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.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

Notice

- Transcript *Pde7b*-203&207 may not be affected.
- The *Pde7b* gene is located on the Chr10. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Pde7b phosphodiesterase 7B [*Mus musculus* (house mouse)]

Gene ID: 29863, updated on 12-Aug-2019

Summary

Official Symbol Pde7b provided by [MGI](#)
Official Full Name phosphodiesterase 7B provided by [MGI](#)
Primary source [MGI:MGI:1352752](#)
See related [Ensembl:ENSMUSG00000019990](#)
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
Expression Broad expression in ovary adult (RPKM 2.7), lung adult (RPKM 2.0) and 22 other tissues [See more](#)
Orthologs [human](#) [all](#)

Genomic context

Location: 10; 10 A3

See Pde7b in [Genome Data Viewer](#)

Exon count: 14

Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	10	NC_000076.6 (20397052..20725078, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	10	NC_000076.5 (20117810..20444874, complement)

Transcript information (Ensembl)

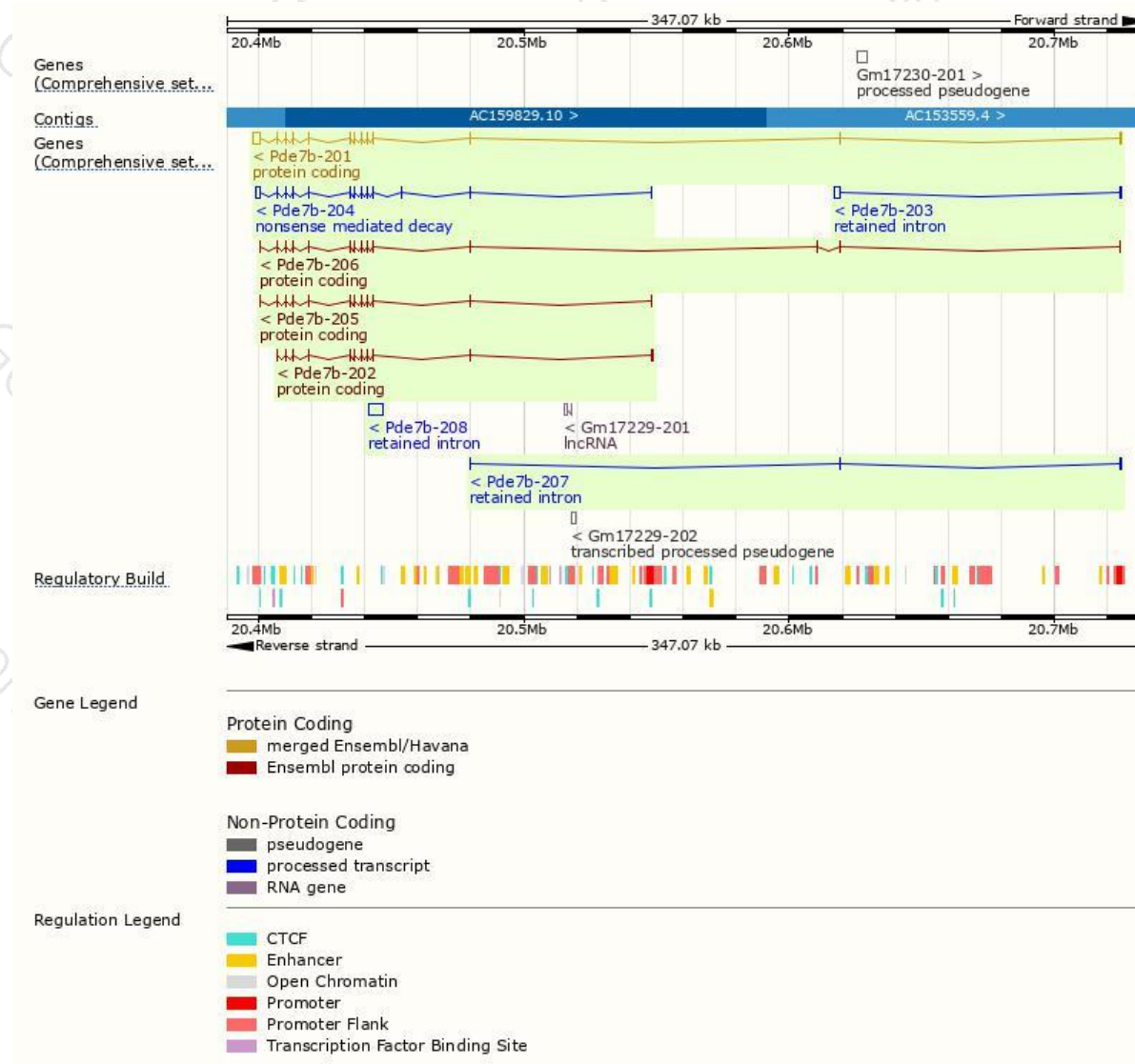
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pde7b-201	ENSMUST00000020165.13	4137	446aa	Protein coding	CCDS35859	Q9QXQ1	TSL:1 GENCODE basic APPRIS P3
Pde7b-205	ENSMUST00000169404.7	1697	498aa	Protein coding	CCDS83686	E9Q0W7	TSL:5 GENCODE basic APPRIS ALT2
Pde7b-202	ENSMUST00000164195.1	1665	440aa	Protein coding	-	E9PW23	TSL:5 GENCODE basic APPRIS ALT2
Pde7b-206	ENSMUST00000170265.7	1380	459aa	Protein coding	-	E9PZN2	TSL:5 GENCODE basic APPRIS ALT2
Pde7b-204	ENSMUST00000169016.7	3257	116aa	Nonsense mediated decay	-	E9Q5I0	TSL:1
Pde7b-208	ENSMUST00000217240.1	5364	No protein	Retained intron	-	-	TSL:NA
Pde7b-203	ENSMUST00000166147.1	2735	No protein	Retained intron	-	-	TSL:1
Pde7b-207	ENSMUST00000170683.7	550	No protein	Retained intron	-	-	TSL:1

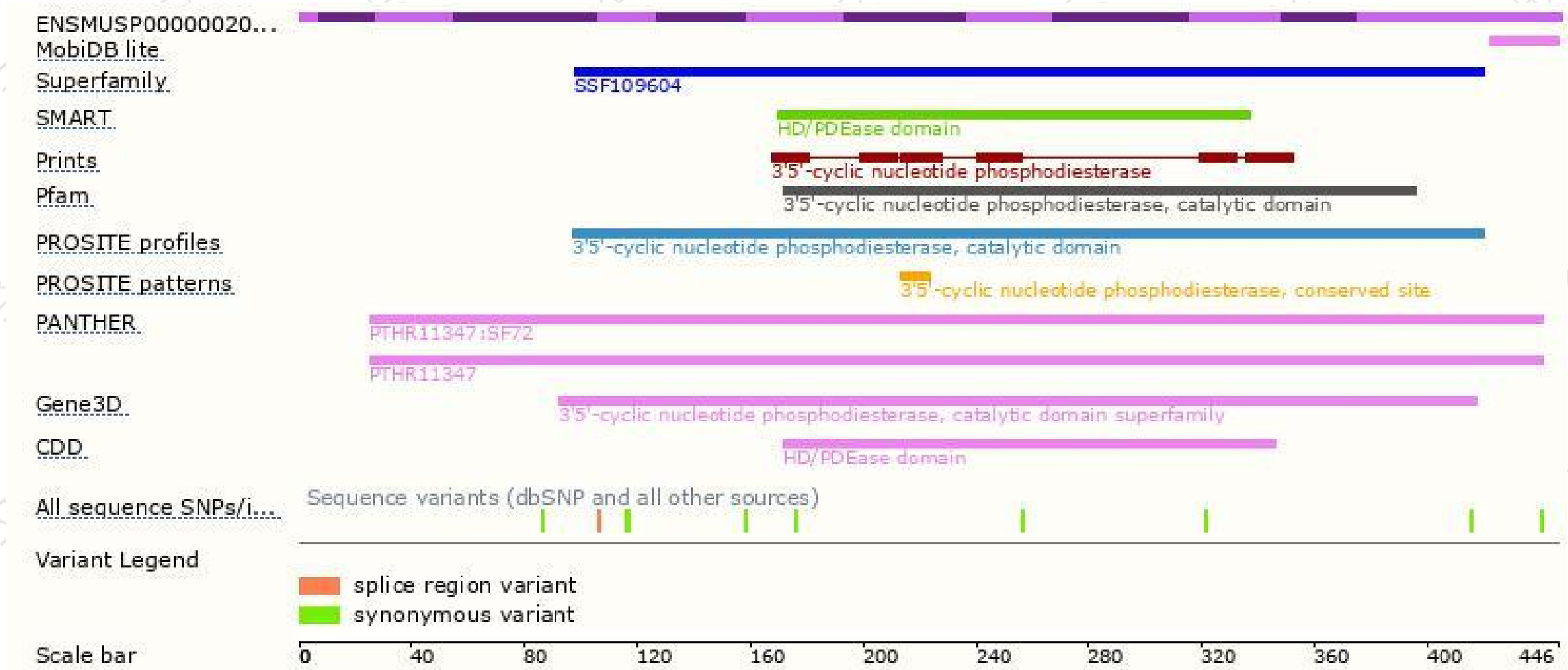
The strategy is based on the design of *Pde7b-201* transcript,The transcription is shown below



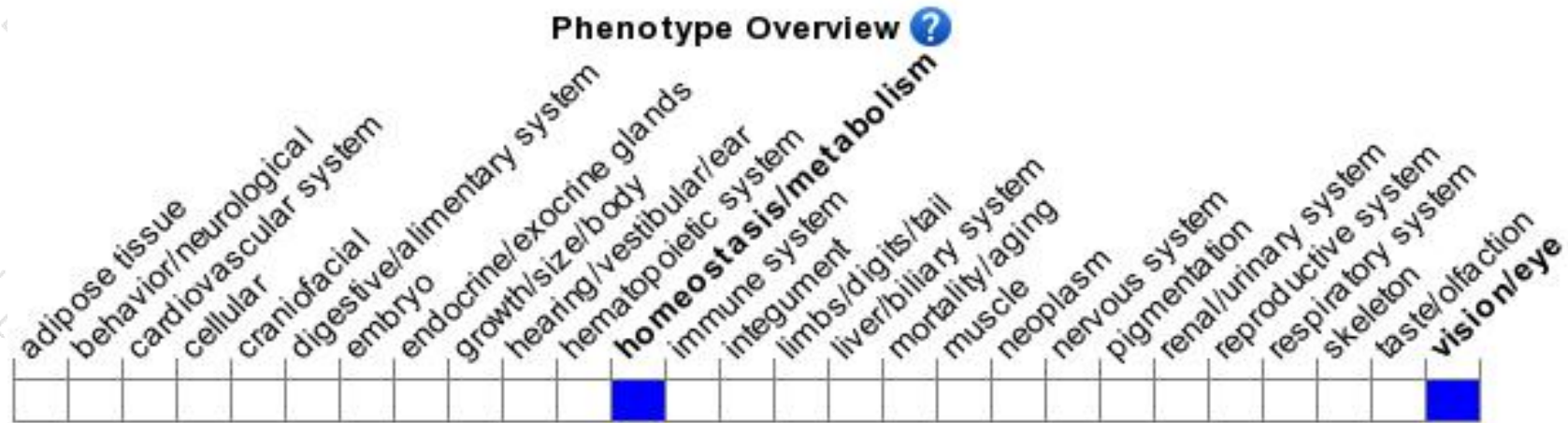
Genomic location distribution



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/>).

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

Tel: 400-9660890

