

Pdgfrb Cas9-CKO Strategy

Designer:

Huan Fan

Design Date:

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Project Overview



Project Name

Pdgfrb

Project type

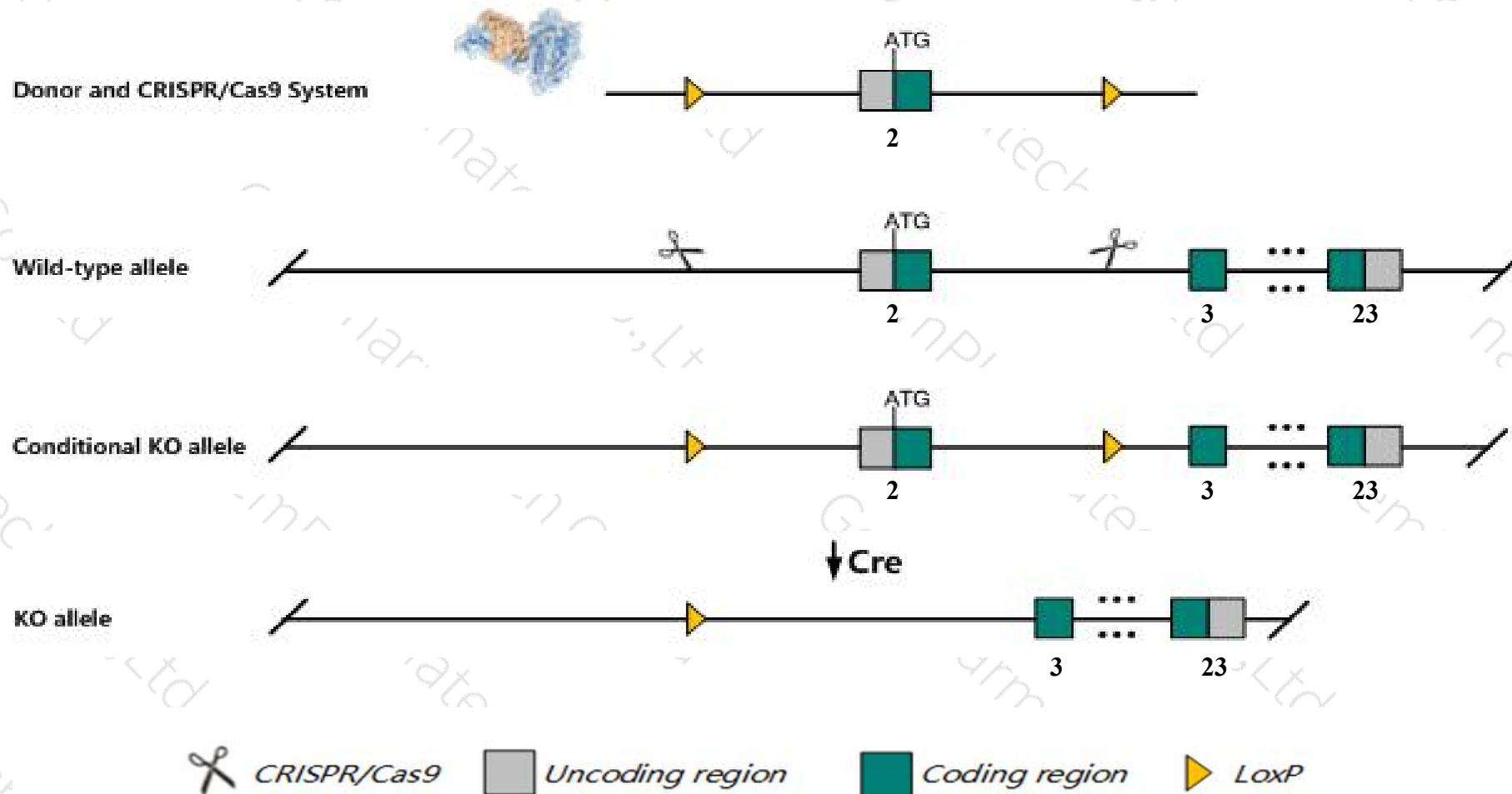
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Pdgfrb* gene has 2 transcripts. According to the structure of *Pdgfrb* gene, exon2 of *Pdgfrb-201* (ENSMUST00000025522.10) 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 *Pdgfrb* 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.

- According to the existing MGI data, Homozygous null mutants die perinatally with internal bleeding, thrombocytopenia, anemia and kidney defects. A frameshift mutation results in neonatal lethals with edema and hemorrhaging; several point mutations show cardiovascular abnormalities.
- The *Pdgfrb* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Pdgfrb platelet derived growth factor receptor, beta polypeptide [Mus musculus (house mouse)]

Gene ID: 18596, updated on 9-Apr-2019

Summary



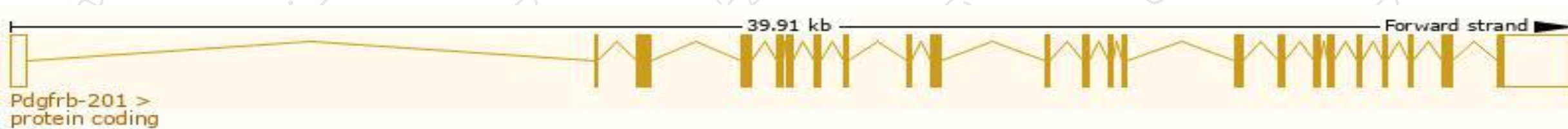
Official Symbol	Pdgfrb provided by MGI
Official Full Name	platelet derived growth factor receptor, beta polypeptide provided by MGI
Primary source	MGI:MGI:97531
See related	Ensembl:ENSMUSG00000024620
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI528809, CD140b, PDGFR-1, Pdgfr
Expression	Broad expression in lung adult (RPKM 46.3), subcutaneous fat pad adult (RPKM 35.2) and 24 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

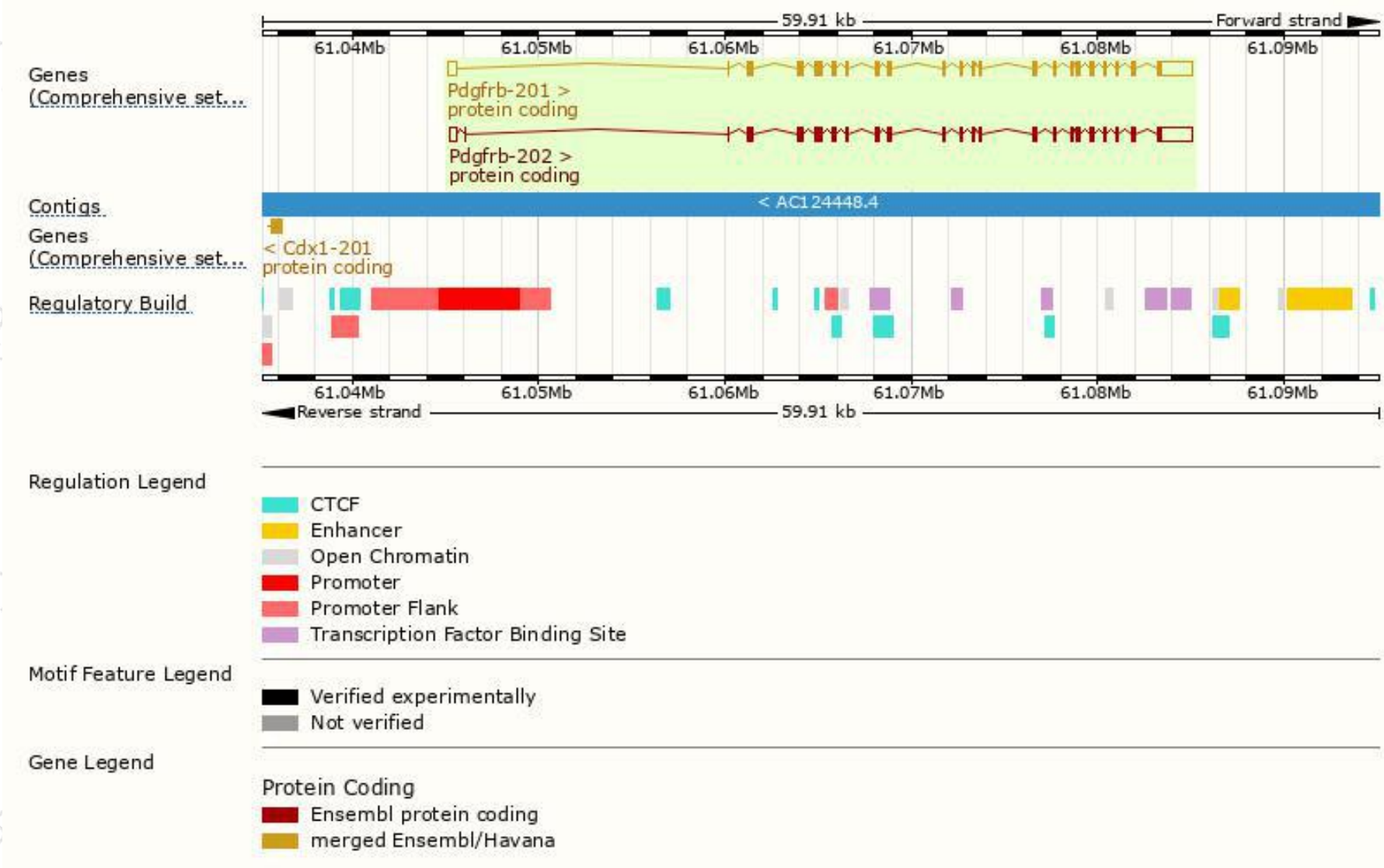
The gene has 2 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pdgfrb-201	ENSMUST00000025522.10	5407	1099aa	Protein coding	CCDS50300	E9QPE2	TSL:1 GENCODE basic APPRIS P2
Pdgfrb-202	ENSMUST00000115274.1	5423	1103aa	Protein coding	-	E9QN12	TSL:1 GENCODE basic APPRIS ALT2

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



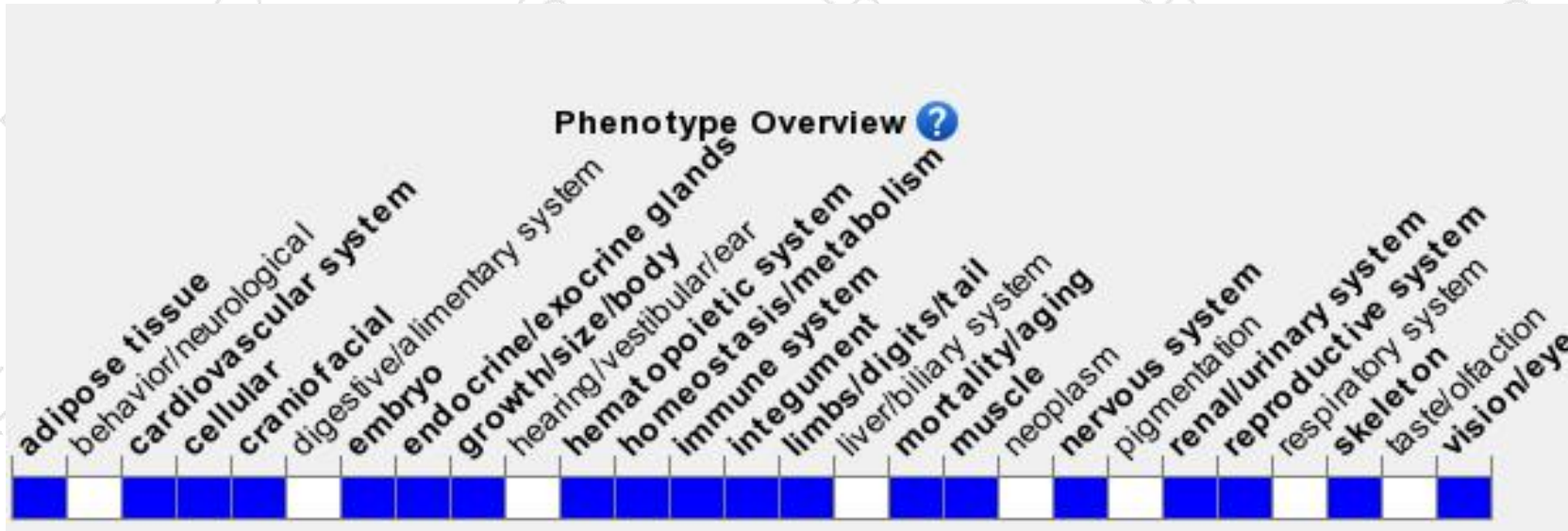
Genomic location distribution



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, Homozygous null mutants die perinatally with internal bleeding, thrombocytopenia, anemia and kidney defects. A frameshift mutation results in neonatal lethals with edema and hemorrhaging; several point mutations show cardiovascular abnormalities.

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

Tel: 400-9660890

