

Ppp1r3b Cas9-CKO Strategy

Designer:

Daohua Xu

Reviewer:

Huimin Su

Design Date:

2020-3-30

Project Overview

Project Name

Ppp1r3b

Project type

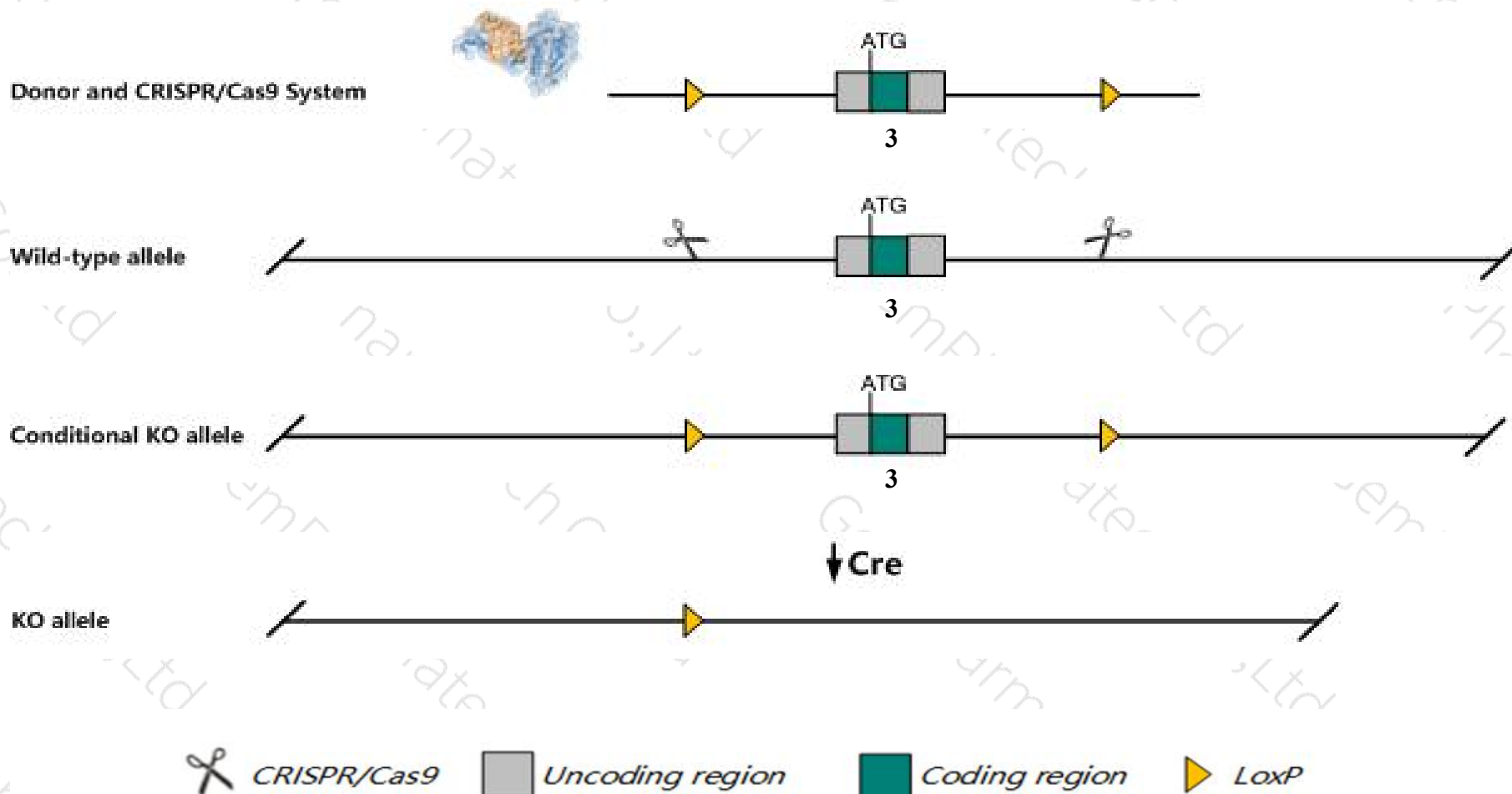
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ppp1r3b* gene. The schematic diagram is as follows:



- The *Ppp1r3b* gene has 4 transcripts. According to the structure of *Ppp1r3b* gene, exon3 of *Ppp1r3b*-204 (ENSMUST00000211648.1) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ppp1r3b* 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, Mice homozygous for a knock-in point mutation exhibit improved glucose tolerance and increased weight loss and serum glucose level in response to a 36 hour fast.
- The *Ppp1r3b* gene is located on the Chr8. 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)

Ppp1r3b protein phosphatase 1, regulatory subunit 3B [*Mus musculus* (house mouse)]

Gene ID: 244416, updated on 13-Mar-2020

Summary

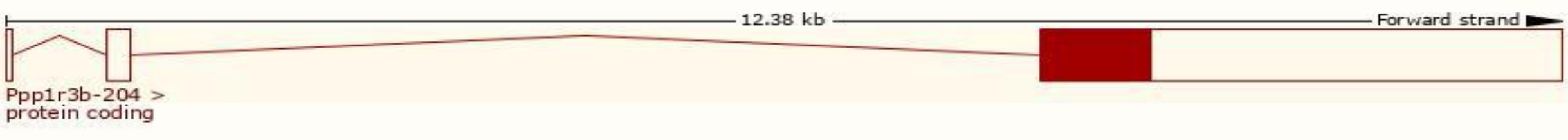
Official Symbol	Ppp1r3b provided by MGI
Official Full Name	protein phosphatase 1, regulatory subunit 3B provided by MGI
Primary source	MGI:MGI:2177268
See related	Ensembl:ENSMUSG00000046794
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	GL; PTG; AW821953; 6430576E21
Expression	Biased expression in liver adult (RPKM 47.3), liver E18 (RPKM 22.7) and 12 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

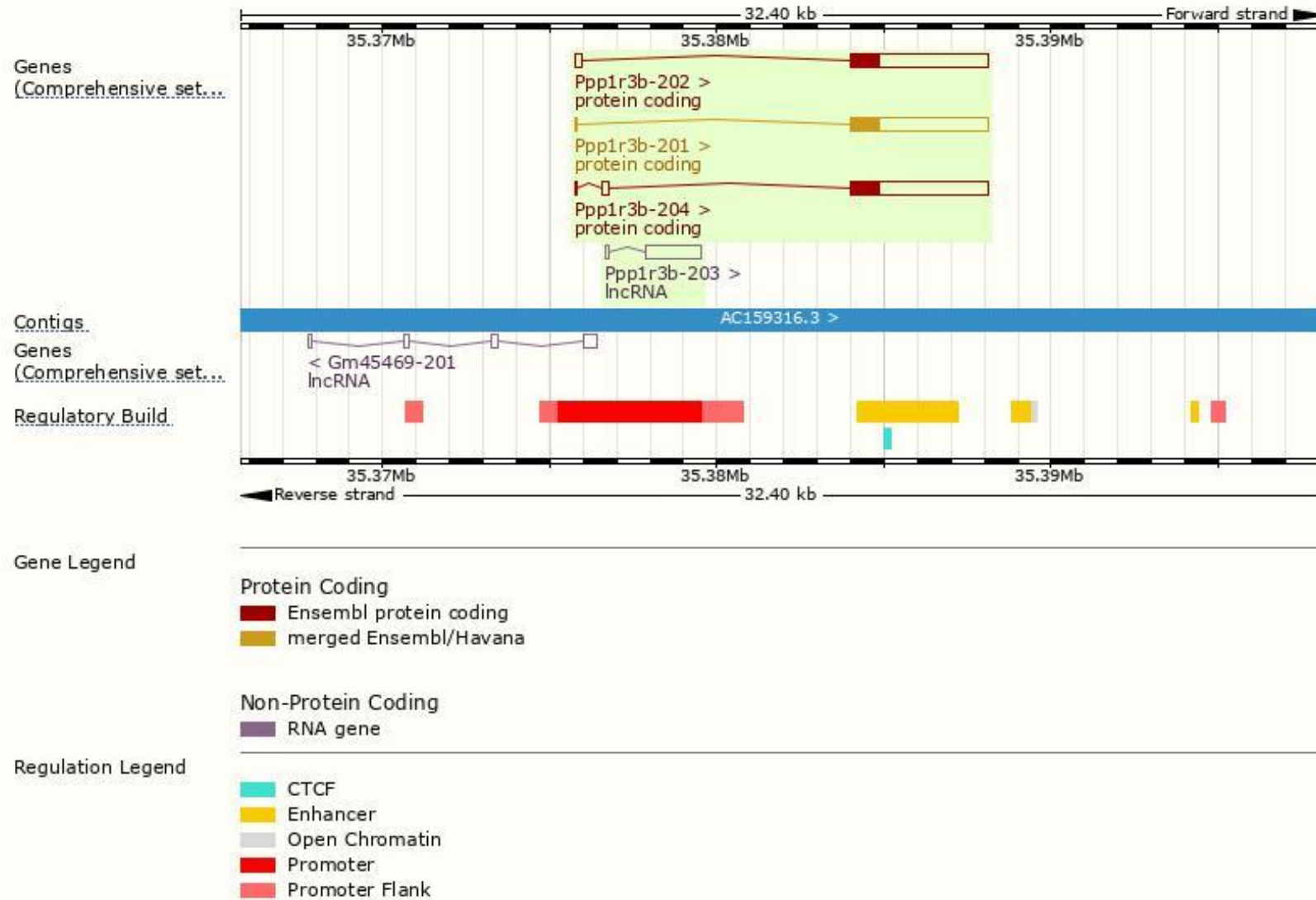
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ppp1r3b-204	ENSMUST00000211648.1	4386	284aa	Protein coding	CCDS22243	Q8C767	TSL:3 GENCODE basic APPRIS P1
Ppp1r3b-202	ENSMUST00000210337.1	4349	284aa	Protein coding	CCDS22243	Q8C767	TSL:2 GENCODE basic APPRIS P1
Ppp1r3b-201	ENSMUST00000070481.7	4221	284aa	Protein coding	CCDS22243	Q8C767	TSL:1 GENCODE basic APPRIS P1
Ppp1r3b-203	ENSMUST00000211472.1	1764	No protein	Processed transcript	-	-	TSL:2

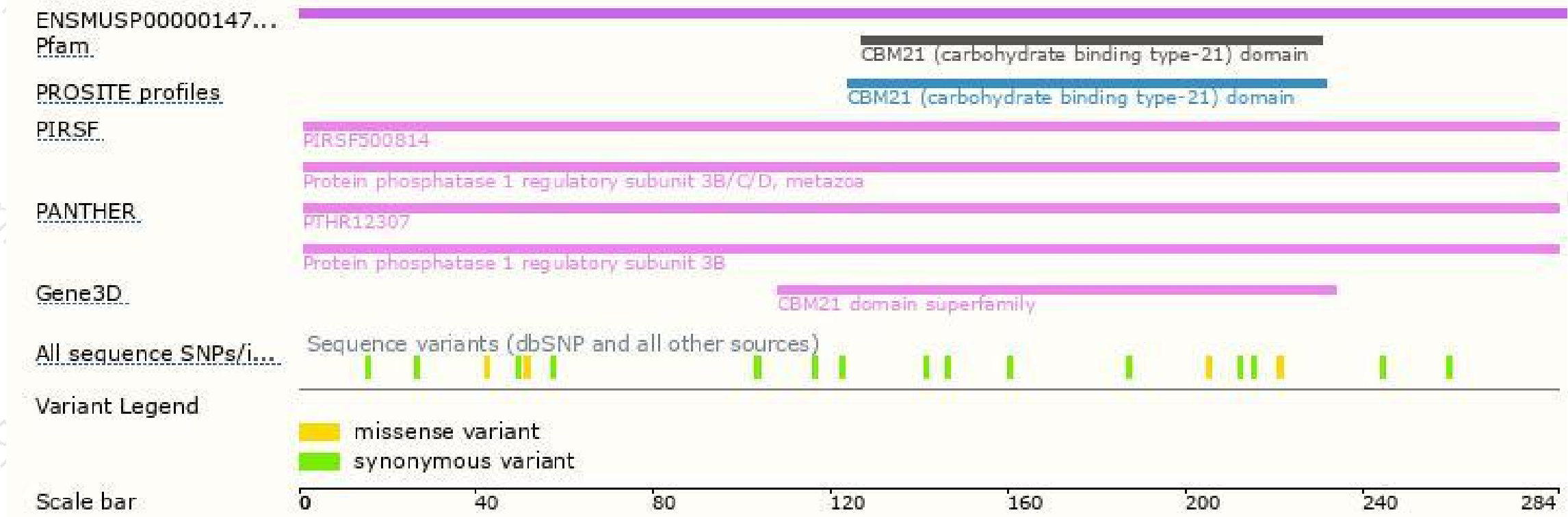
The strategy is based on the design of *Ppp1r3b-204* transcript,The transcription is shown below



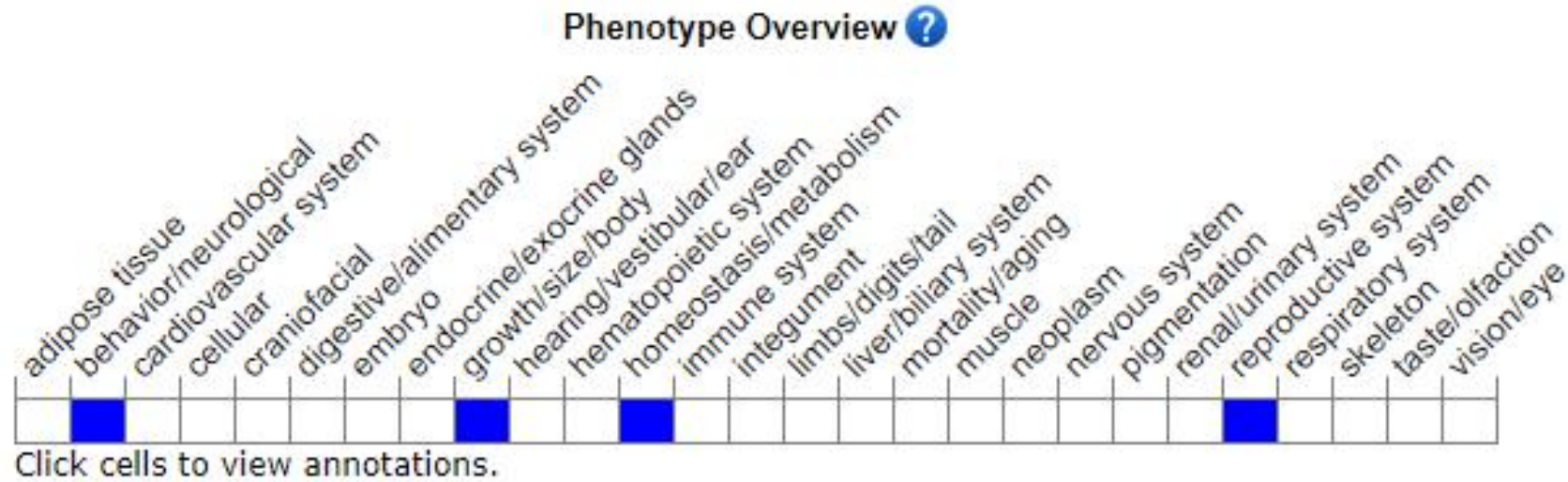
Genomic location distribution



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-in point mutation exhibit improved glucose tolerance and increased weight loss and serum glucose level in response to a 36 hour fast.

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

Tel: 400-9660890

