

Ppp2r5d Cas9-CKO Strategy

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Project Overview

Project Name

Ppp2r5d

Project type

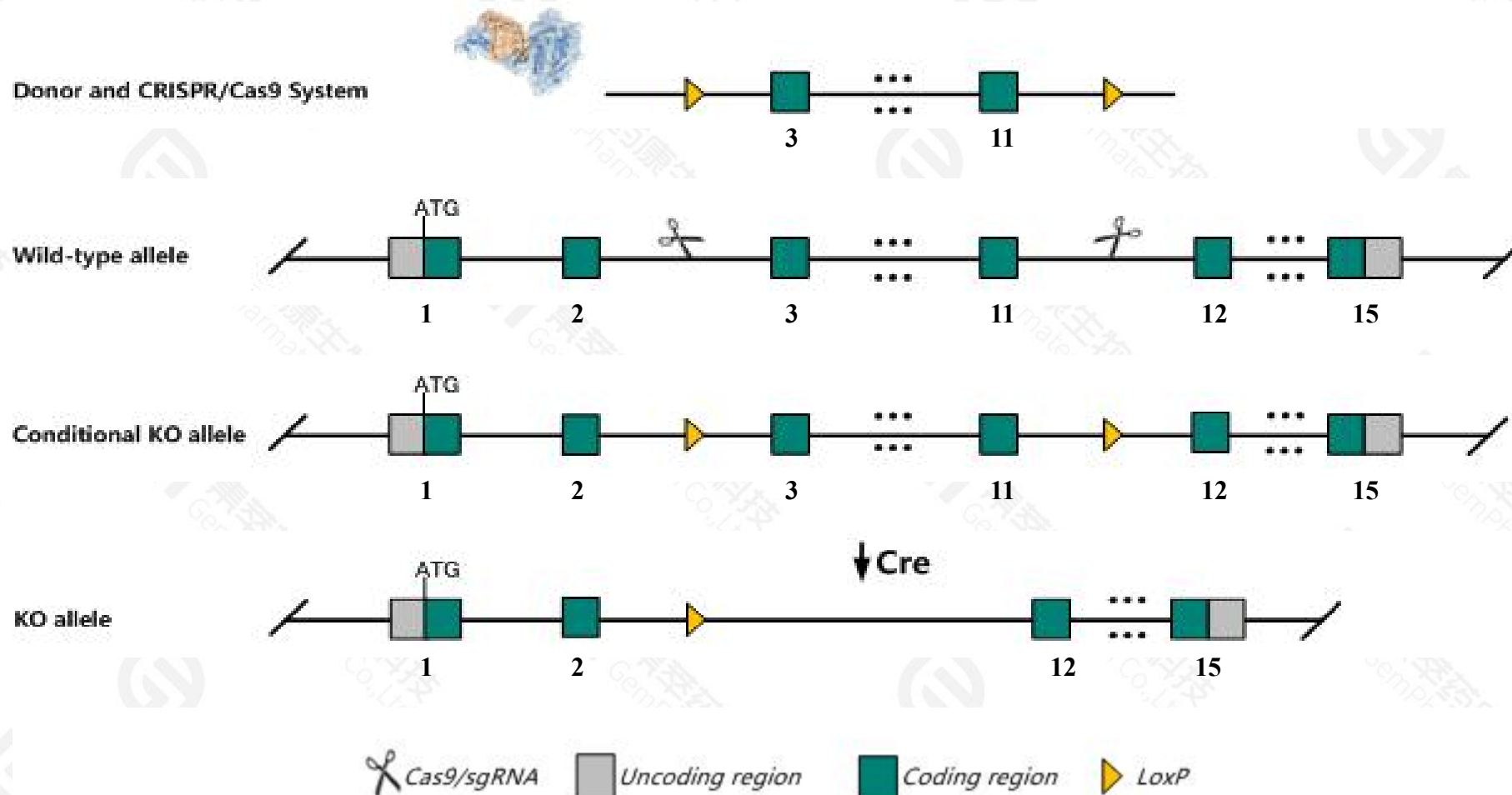
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ppp2r5d* gene. The schematic diagram is as follows:



- The *Ppp2r5d* gene has 4 transcripts. According to the structure of *Ppp2r5d* gene, exon3-exon11 of *Ppp2r5d-201*(ENSMUST00000002839.9) transcript is recommended as the knockout region. The region contains 1250bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ppp2r5d* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor was constructed. Cas9, sgRNA 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 was 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 gene-trap allele exhibit lethality, while heterozygous mice display decreased prepulse inhibition. Mice homozygous for a targeted knock-out allele exhibit decreased thermal nociception threshold, impaired coordination, and increased latency to removing an adhesive sticker.
- The Intron11 is only 535bp, loxp insertion may affect mRNA splicing.
- The *Ppp2r5d* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Ppp2r5d protein phosphatase 2, regulatory subunit B', delta [Mus musculus (house mouse)]

Gene ID: 21770, updated on 13-Mar-2020

Summary



Official Symbol Ppp2r5d provided by [MGI](#)

Official Full Name protein phosphatase 2, regulatory subunit B', delta provided by [MGI](#)

Primary source [MGI:MGI:2388481](#)

See related [Ensembl:ENSMUSG00000059409](#)

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 B'delta, TEG-271, Tex271

Expression Ubiquitous expression in large intestine adult (RPKM 36.1), CNS E11.5 (RPKM 34.1) and 28 other tissues [See more](#)

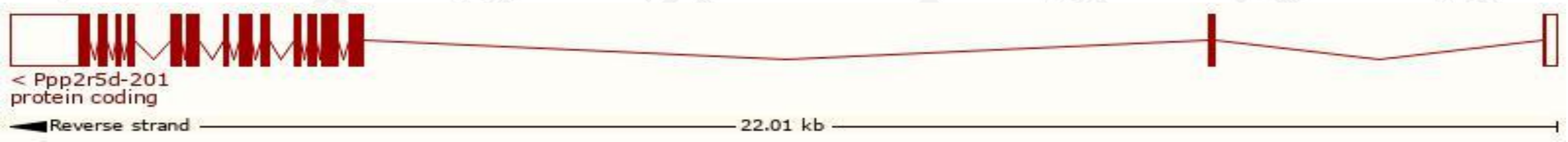
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

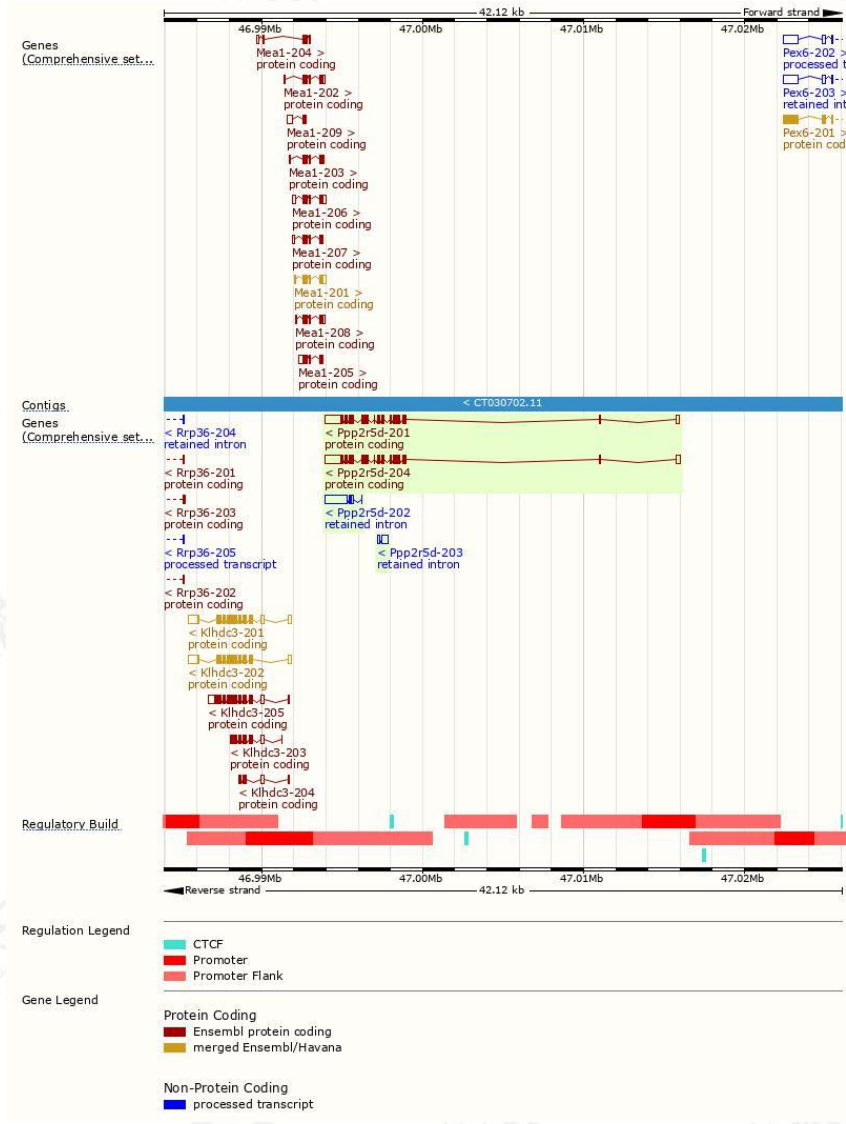
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ppp2r5d-201	ENSMUST0000002839.8	2926	594aa	Protein coding	CCDS28836	Q91V89	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 P2
Ppp2r5d-204	ENSMUST00000233988.1	3038	595aa	Protein coding	-	Q7TNL5	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 ALT2
Ppp2r5d-202	ENSMUST00000233082.1	1587	No protein	Retained intron	-	-	
Ppp2r5d-203	ENSMUST00000233757.1	485	No protein	Retained intron	-	-	

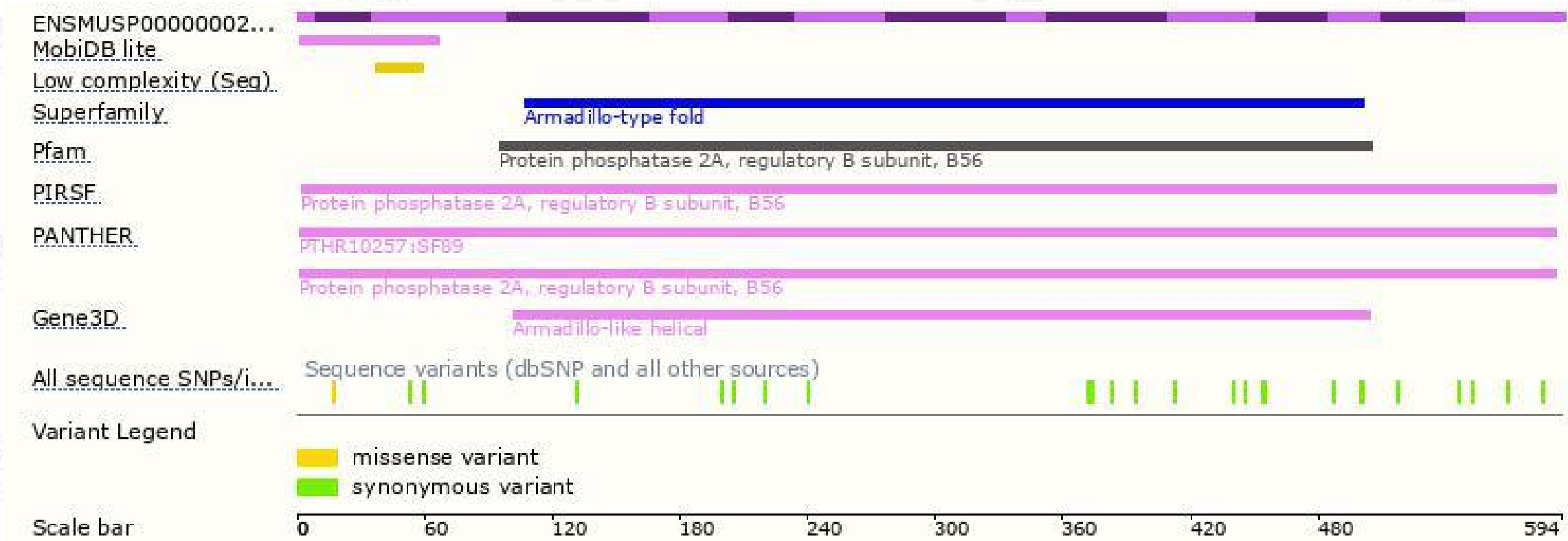
The strategy is based on the design of *Ppp2r5d-201* transcript,the transcription is shown below:



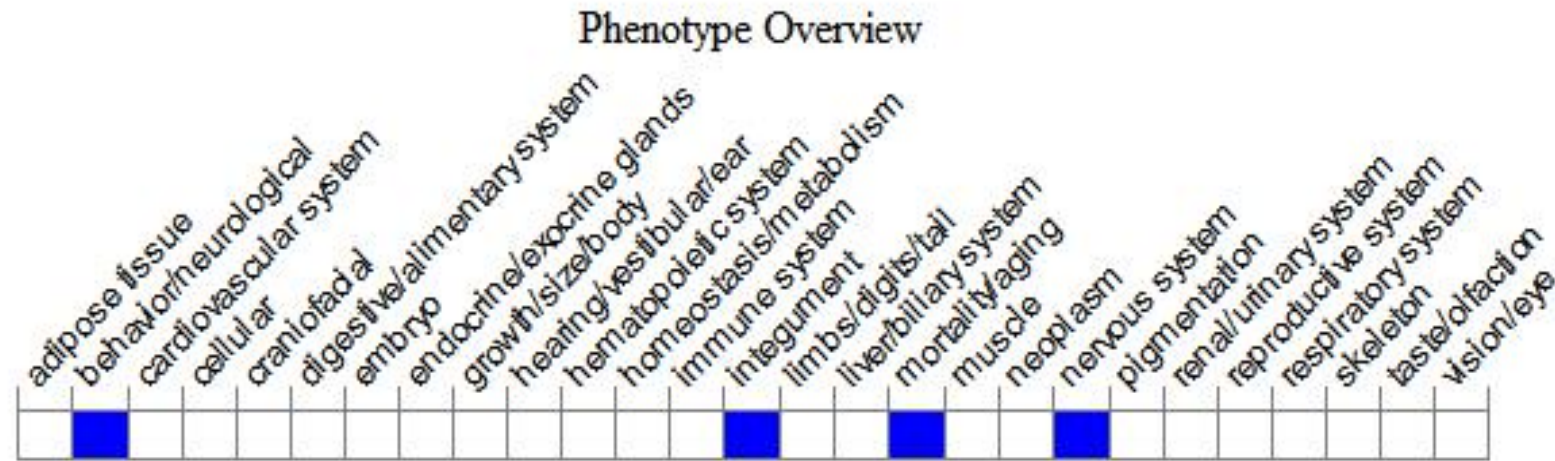
Genomic location distribution



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/>).

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

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