

Pclo Cas9-KO Strategy

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Project Overview

Project Name

Pclo

Project type

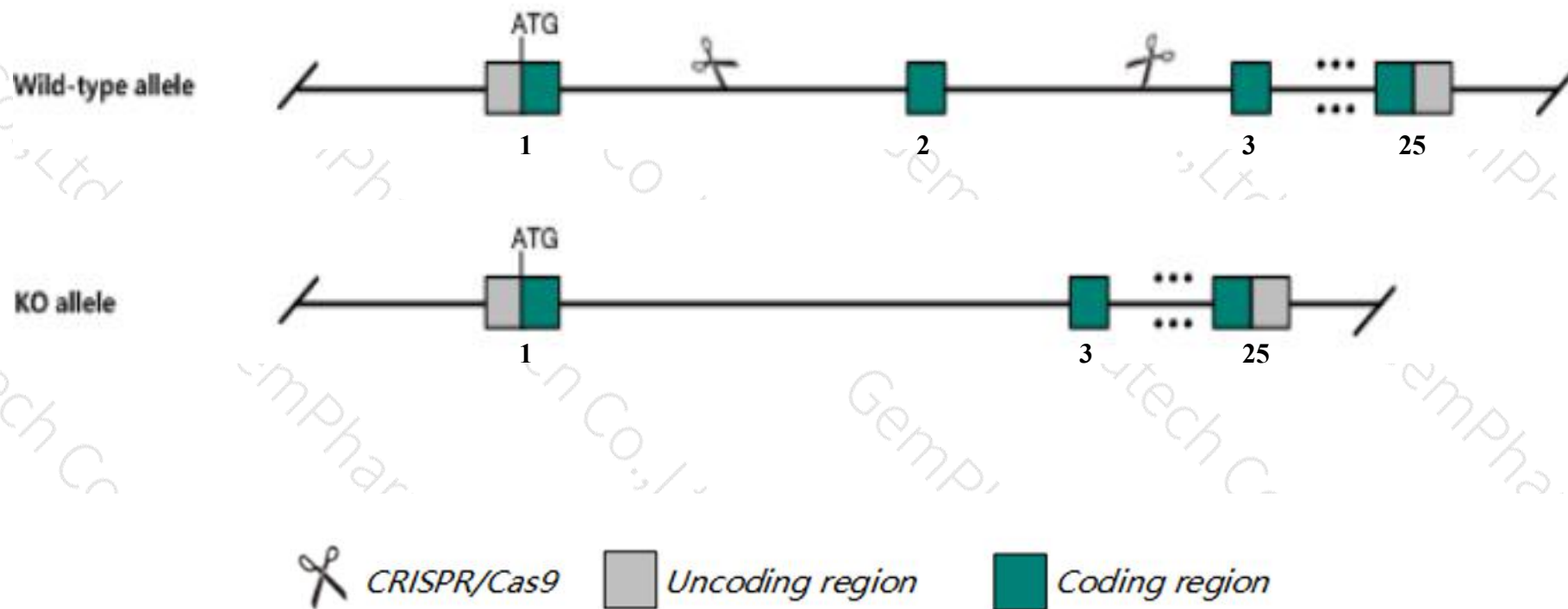
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



Technical routes

- The *Pclo* gene has 4 transcripts. According to the structure of *Pclo* gene, exon2 of *Pclo-201*(ENSMUST00000030691.16) transcript is recommended as the knockout region. The region contains 1483bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Pclo* gene. The brief process is as follows: gRNA was transcribed in vitro. Cas9 and gRNA 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.

- According to the existing MGI data, mice homozygous for one deletion of *Pclo* are viable and fertile, and display no overt abnormal phenotype. Mice homozygous for another knock-out allele exhibit some premature lethality, decreased body size, and abnormal synaptic vesicle number.
- Transcript *Pclo*-204 may not be affected.
- The KO region contains functional region of the *Gm26918* gene. Knockout the region may affect the function of *Gm26918* gene.
- The *Pclo* gene is located on the Chr5. 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)

Pclo piccolo (presynaptic cytomatrix protein) [*Mus musculus* (house mouse)]

Gene ID: 26875, updated on 26-Jun-2020

Summary



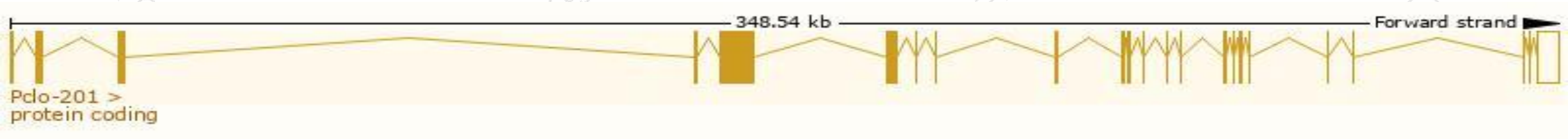
Official Symbol	Pclo provided by MGI
Official Full Name	piccolo (presynaptic cytomatrix protein) provided by MGI
Primary source	MGI:MGI:1349390
See related	Ensembl:ENSMUSG000000061601
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Acz; Pico
Expression	Biased expression in cerebellum adult (RPKM 10.3), cortex adult (RPKM 8.0) and 5 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

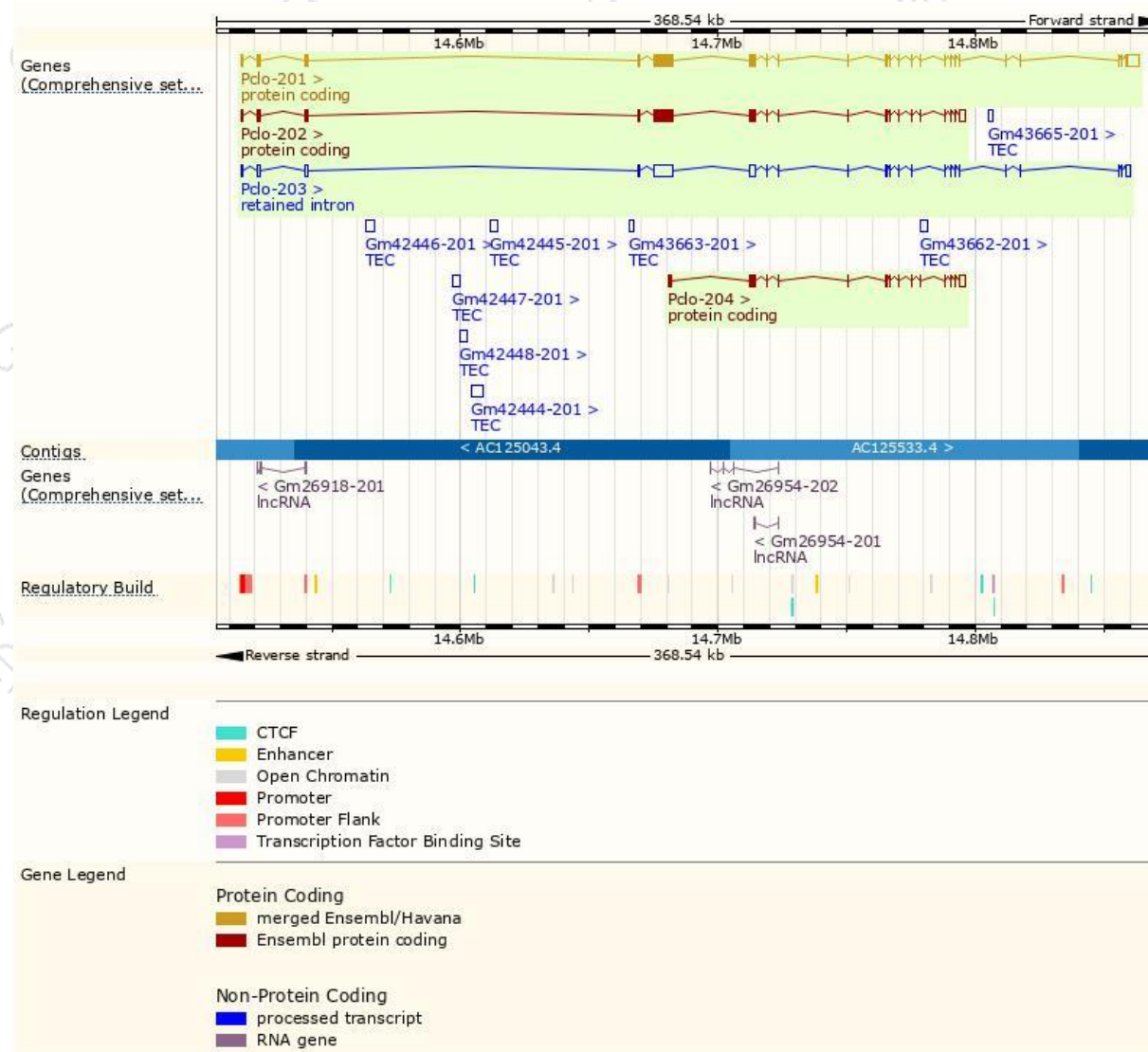
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pclo-201	ENSMUST00000030691.16	20084	5068aa	Protein coding	CCDS51415	Q9QYX7	TSL:5 GENCODE basic APPRIS P1
Pclo-202	ENSMUST00000182407.7	16846	4863aa	Protein coding	CCDS59667	Q9QYX7	TSL:5 GENCODE basic
Pclo-204	ENSMUST00000182915.1	6738	1592aa	Protein coding	-	S4R2E0	CDS 5' incomplete TSL:1
Pclo-203	ENSMUST00000182426.2	17063	No protein	Retained intron	-	-	TSL:2

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



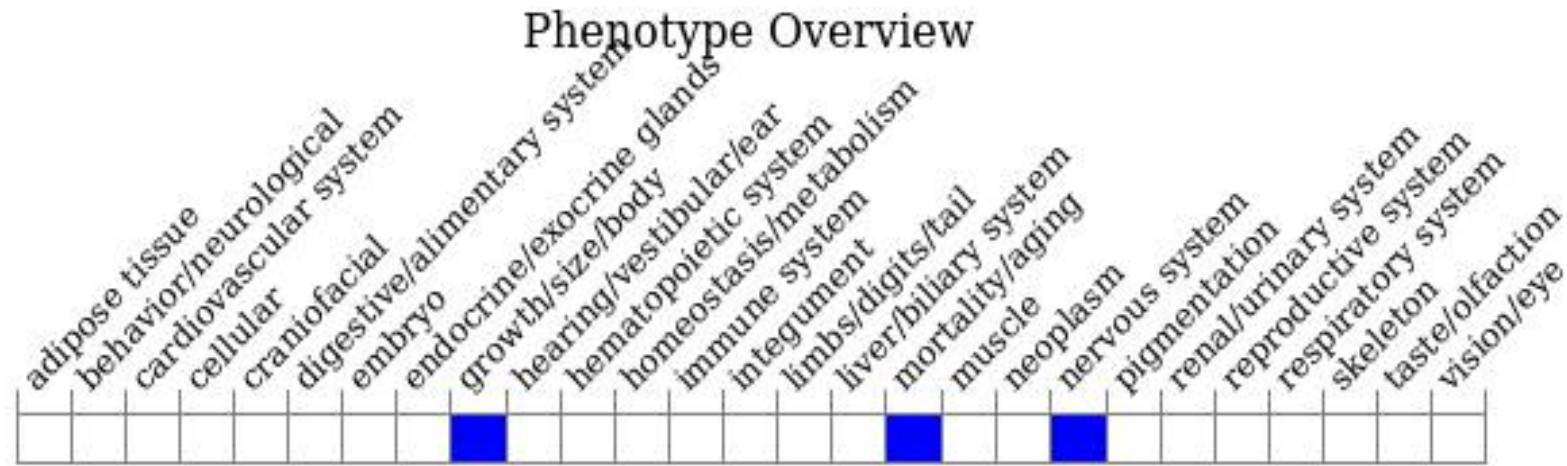
Genomic location distribution



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, mice homozygous for one deletion of *Pclo* are viable and fertile, and display no overt abnormal phenotype. Mice homozygous for another knock-out allele exhibit some premature lethality, decreased body size, and abnormal synaptic vesicle number.

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

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