Pde1b Cas9-CKO Strategy

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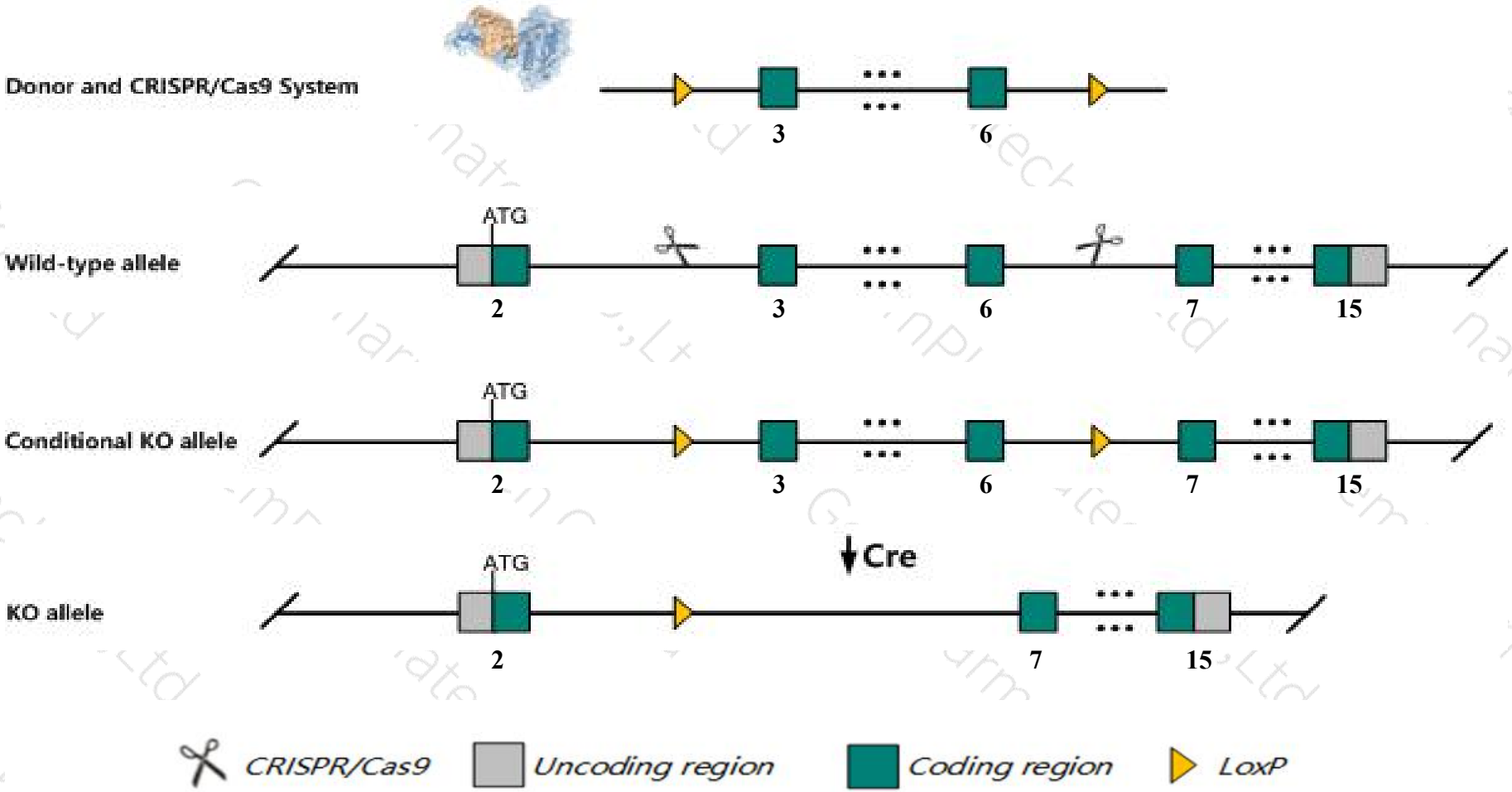
Project Overview

Project Name	***Pde1b***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pde1b* gene. The schematic diagram is as follows:



Technical routes

- The *Pde1b* gene has 5 transcripts. According to the structure of *Pde1b* gene, exon3-exon6 of *Pde1b-201* (ENSMUST00000023132.4) transcript is recommended as the knockout region.The region contains 481bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Pde1b* 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

- According to the existing MGI data,Mice homozygous for disruptions in this gene display increased exploratory behavior. Learning deficits and hyperactivity are also observed in some situations.
- Transcript *Pde1b*-204 may not be affected .
- The *Pde1b* gene is located on the Chr15. 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）

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Pde1b phosphodiesterase 1B, Ca2+-calmodulin dependent [Mus musculus (house mouse)]

Gene ID: 18574, updated on 7-Apr-2019

Summary

Official Symbol	Pde1b provided by MGI
Official Full Name	phosphodiesterase 1B, Ca2+-calmodulin dependent provided by MGI
Primary source	MGI:MGI:97523
See related	Ensembl:ENSMUSG00000022489
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	Pde1b1
Expression	Broad expression in cortex adult (RPKM 29.2), frontal lobe adult (RPKM 27.9) and 19 other tissues See more
Orthologs	human all

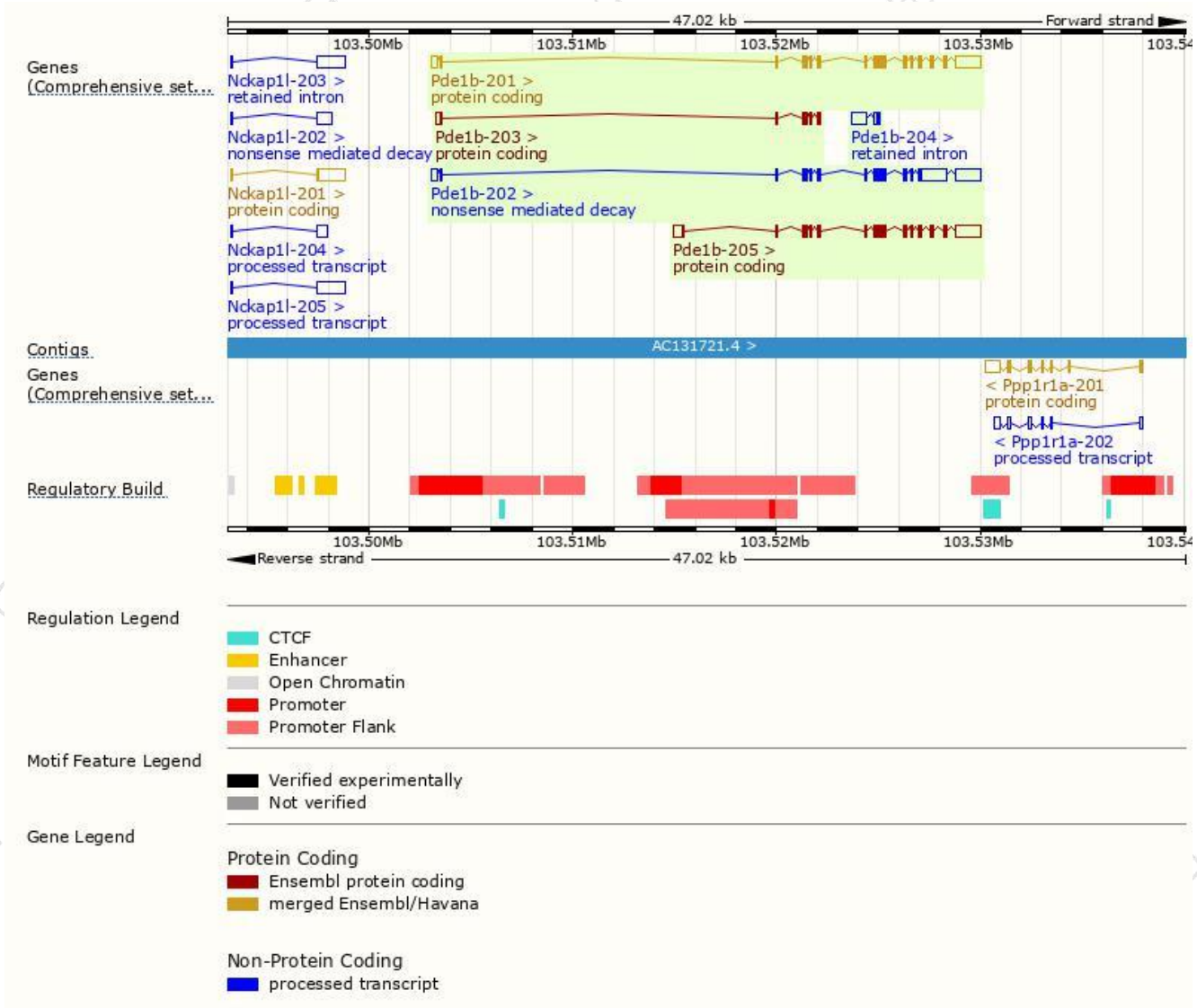
Transcript information（Ensembl）

The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pde1b-201	ENSMUST00000023132.4	3218	535aa	Protein coding	CCDS27904	Q01065	TSL:1 GENCODE basic APPRIS P2
Pde1b-205	ENSMUST00000227955.1	3258	516aa	Protein coding	-	A0A2I3BPC1	GENCODE basic APPRIS ALT1
Pde1b-203	ENSMUST00000226493.1	775	192aa	Protein coding	-	A0A2I3BR90	CDS 3' incomplete
Pde1b-202	ENSMUST00000226468.1	4215	458aa	Nonsense mediated decay	-	Q6PDS5	
Pde1b-204	ENSMUST00000227925.1	923	No protein	Retained intron	-	-	

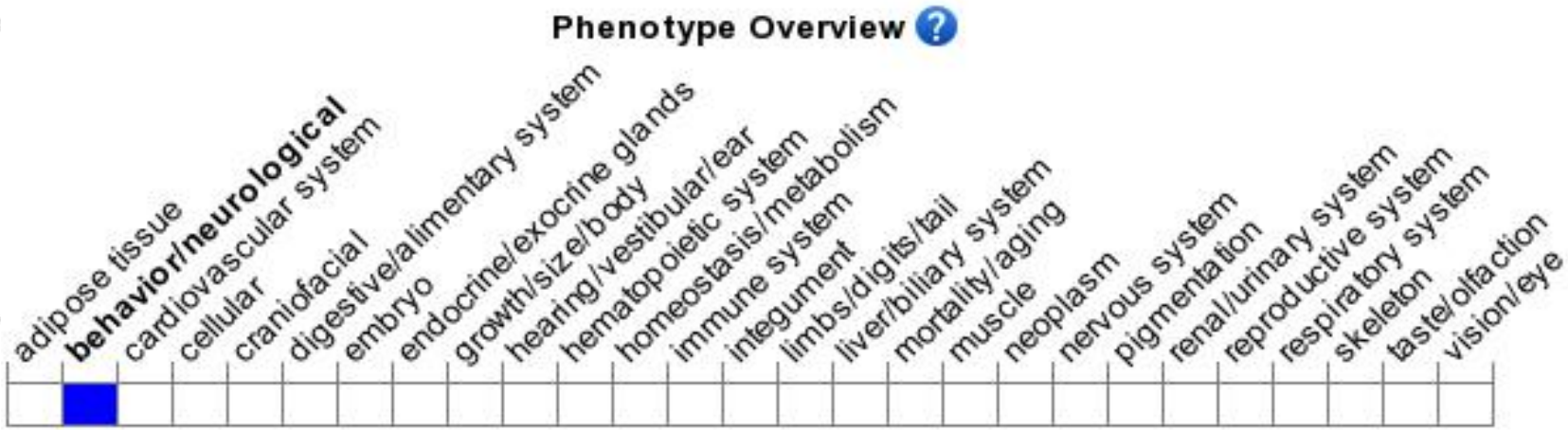
The strategy is based on the design of *Pde1b-201* transcript,The transcription is shown below

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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