# *Pde1b* Cas9-KO Strategy

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Design Date: 2019-7-22

# Project Overview

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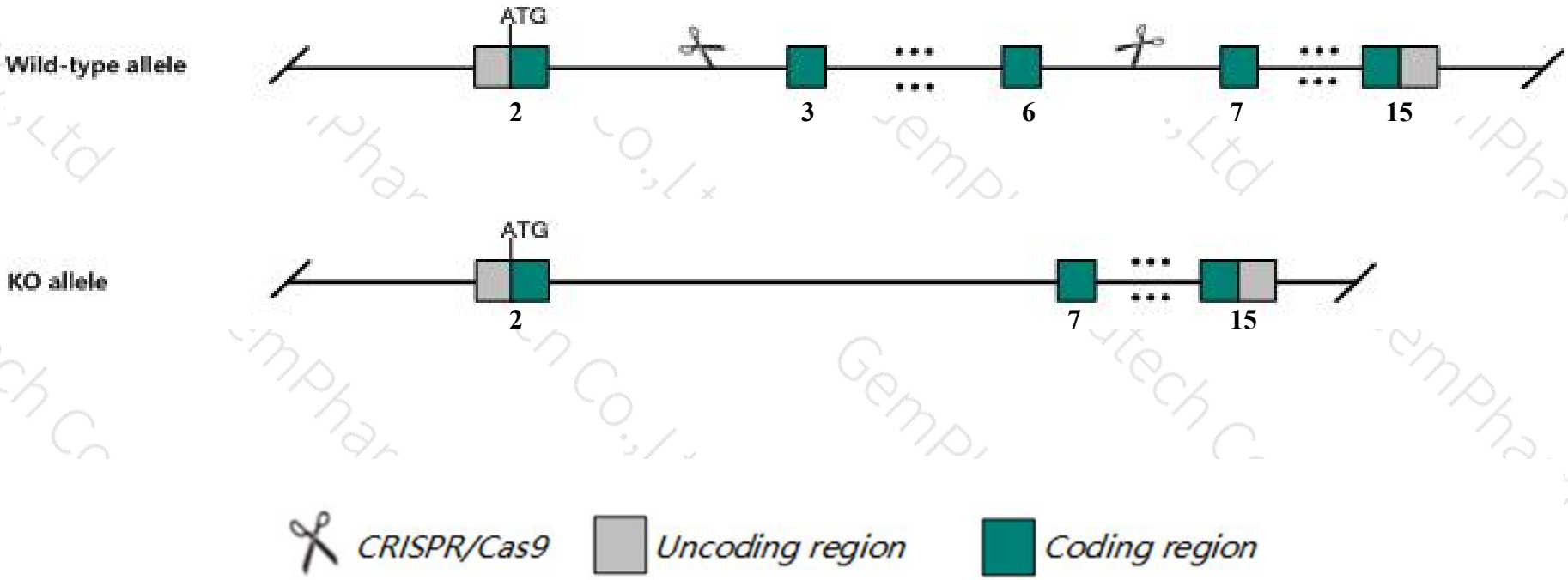
| **Project Name** | ***Pde1b*** |
| **Project type** | **Cas9-KO** |
| **Strain background** | **C57BL/6JGpt** |

# 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

# 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology 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

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|---|---|
| **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 |

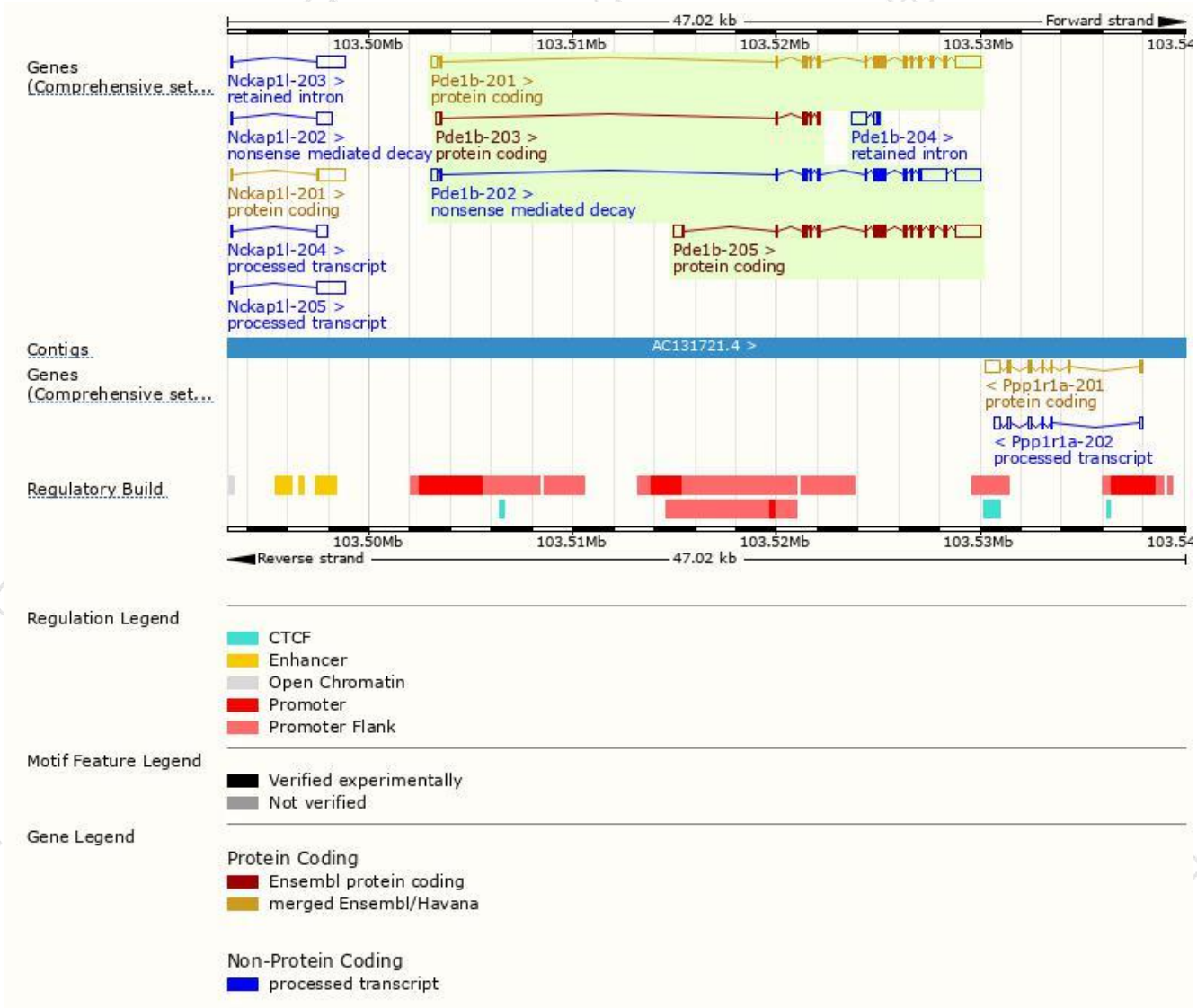
# Transcript information（Ensembl）

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 | - | - | |

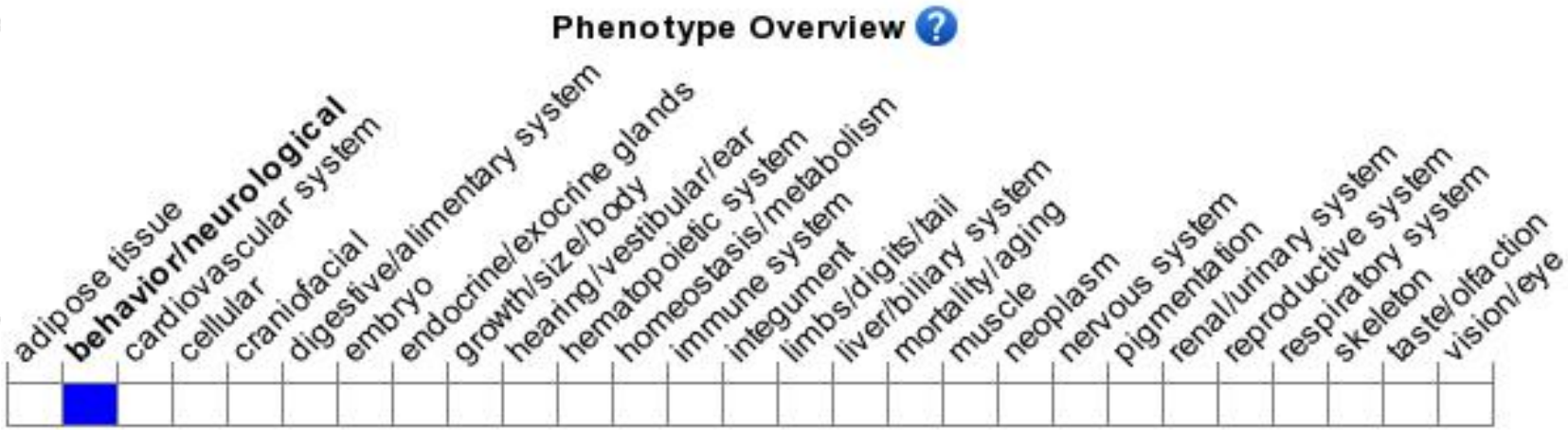
The strategy is based on the design of *Pde1b-201* transcript,The transcription is shown below

# 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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