Pdzd7 Cas9-KO Strategy

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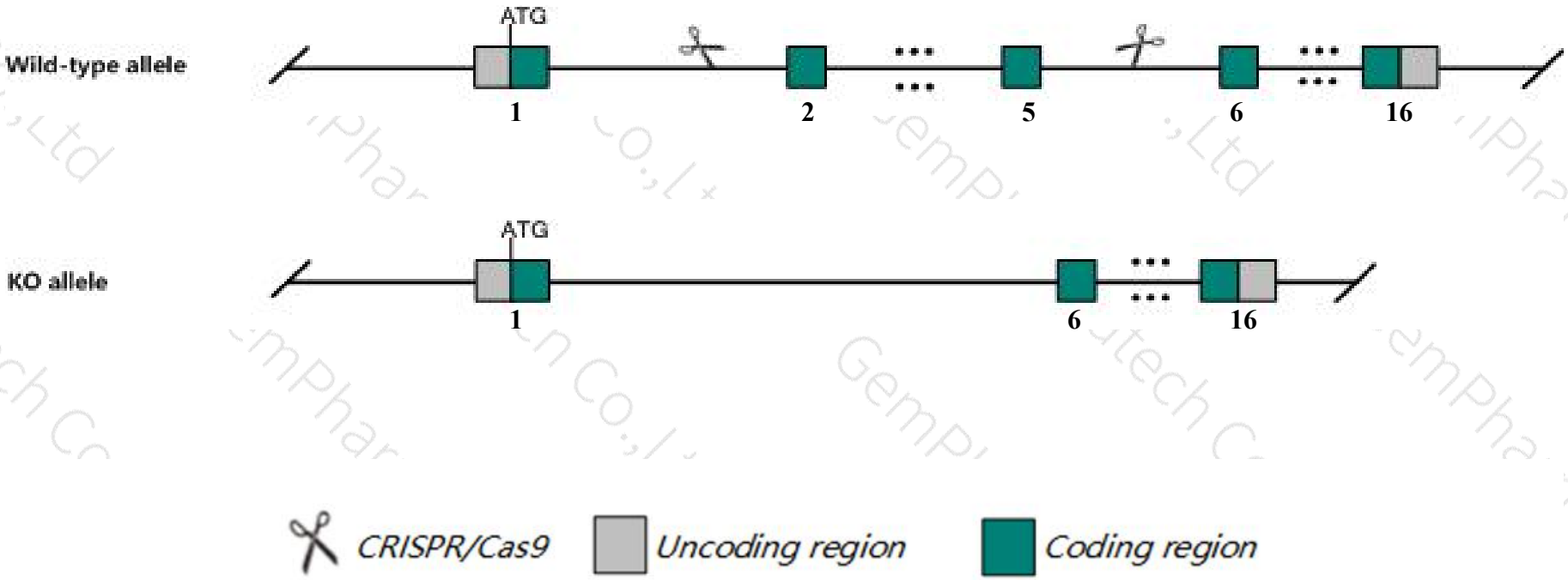
Date:2020-02-20

Project Overview

Project Name	***Pdzd7***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pdzd7* gene. The schematic diagram is as follows:



Technical routes

➢ The *Pdzd7* gene has 8 transcripts. According to the structure of *Pdzd7* gene, exon2-exon5 of *Pdzd7-203* (ENSMUST00000169459.3) transcript is recommended as the knockout region.The region contains 641bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Pdzd7* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Mice homozygous for a knock-out allele exhibit profound deafness due to abnormal outer cochlear hair cell morphology and function.
- The knockout region is near to the N-terminal of *Sfxn3* gene,this strategy may influence the regulatory function of the N-terminal of *Sfxn3* gene.
- Transcript *Pdzd7*-201 may not be affected.
- The *Pdzd7* gene is located on the Chr19. 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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Pdzd7 PDZ domain containing 7 [*Mus musculus* (house mouse)]

Gene ID: 100503041, updated on 10-Oct-2019

Summary

Official Symbol	Pdzd7 provided by MGI
Official Full Name	PDZ domain containing 7 provided by MGI
Primary source	MGI:MGI:3608325
See related	Ensembl:ENSMUSG00000074818
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	Pdzk7; EG435601; 9130207N01
Expression	Biased expression in adrenal adult (RPKM 18.9), colon adult (RPKM 4.4) and 9 other tissues See more
Orthologs	human all

Genomic context

Location: 19; 19 C3

See Pdzd7 in Genome Data Viewer

Exon count: 21

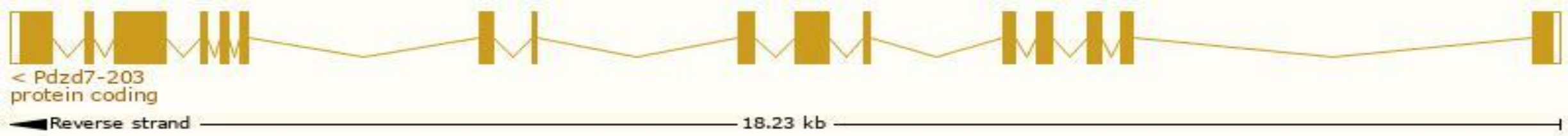
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	19	NC_000085.6 (45026907..45058633, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	19	NC_000085.5 (45102105..45120133, complement)

Transcript information（Ensembl）

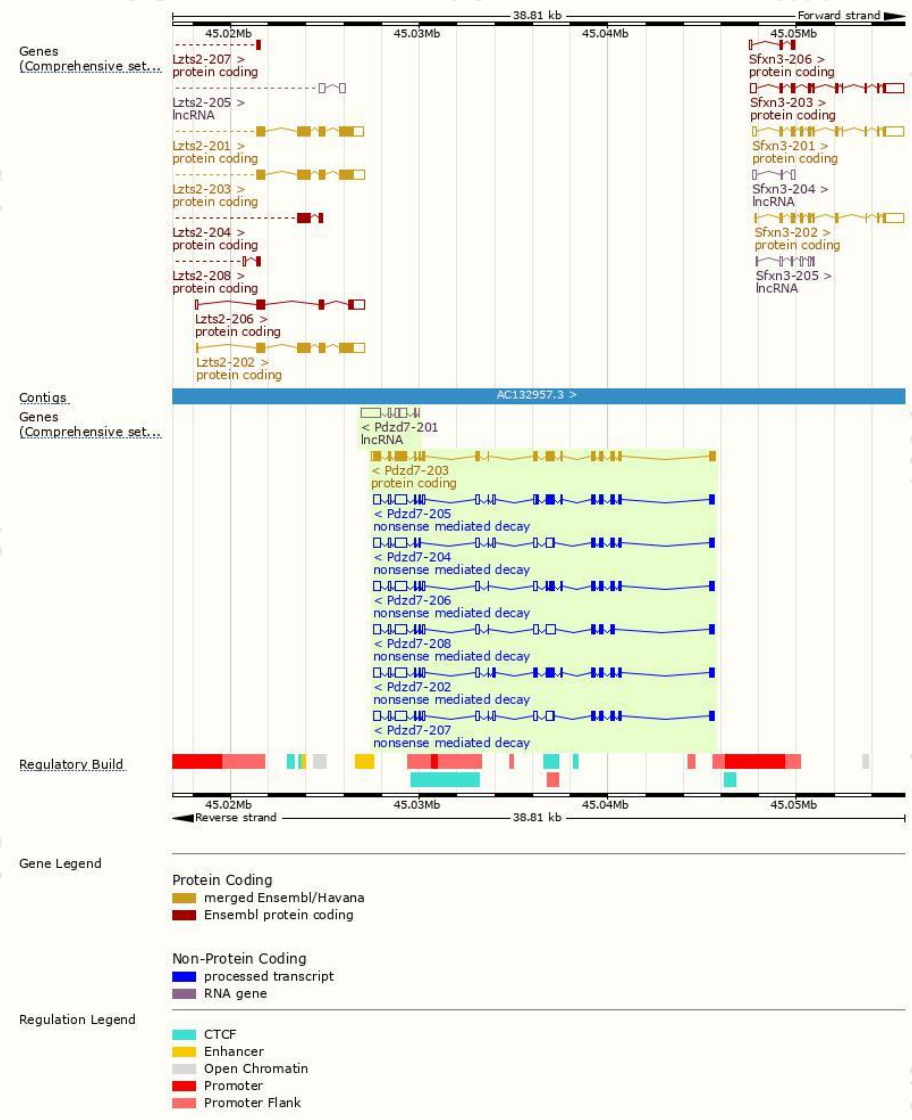
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pdzd7-203	ENSMUST00000169459.3	3265	1021aa	Protein coding	CCDS57145	E9Q9W7	TSL:5 GENCODE basic APPRIS P1
Pdzd7-205	ENSMUST00000237227.1	3190	476aa	Nonsense mediated decay	-	-	
Pdzd7-202	ENSMUST00000145391.8	3161	553aa	Nonsense mediated decay	-	E9Q9W7	TSL:5
Pdzd7-207	ENSMUST00000237962.1	3100	289aa	Nonsense mediated decay	-	-	
Pdzd7-204	ENSMUST00000237077.1	3008	289aa	Nonsense mediated decay	-	-	
Pdzd7-206	ENSMUST00000237833.1	2981	409aa	Nonsense mediated decay	-	-	
Pdzd7-208	ENSMUST00000238074.1	2975	245aa	Nonsense mediated decay	-	X4ZEG9	
Pdzd7-201	ENSMUST00000038901.5	1799	No protein	lncRNA	-	-	TSL:1

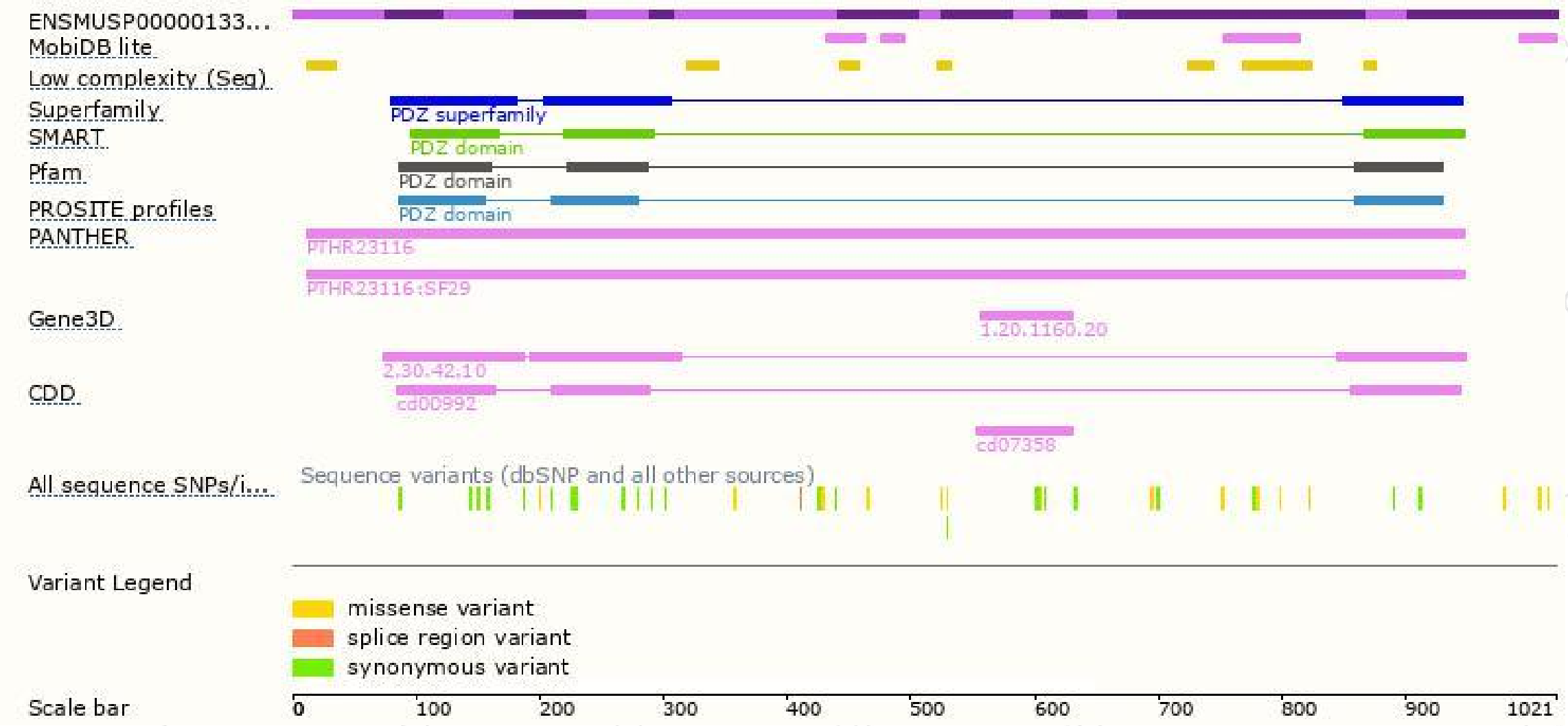
The strategy is based on the design of *Pdzd7-203* transcript,The transcription is shown below



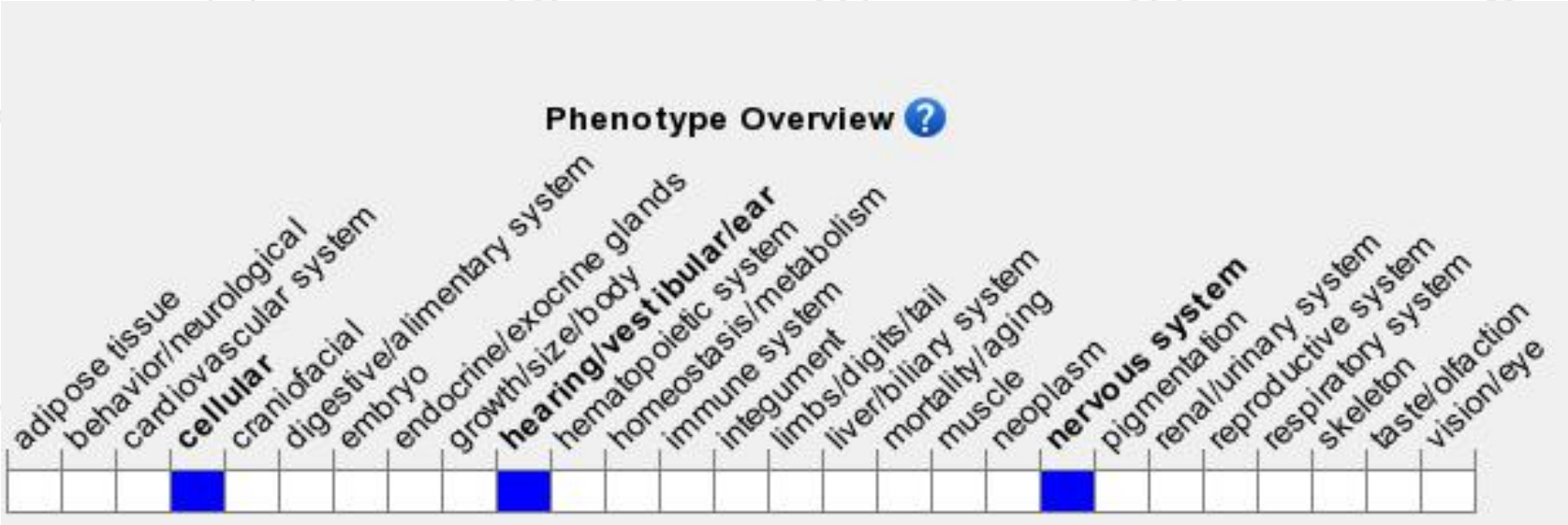
Genomic location distribution



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-out allele exhibit profound deafness due to abnormal outer cochlear hair cell morphology and function.

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

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