

Prex2 Cas9-KO Strategy

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Project Overview

Project Name

Prex2

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Prex2* gene. The schematic diagram is as follows:



- The *Prex2* gene has 8 transcripts. According to the structure of *Prex2* gene, exon2-exon9 of *Prex2-201* (ENSMUST00000027056.11) transcript is recommended as the knockout region. The region contains 952bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Prex2* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI data, Mice homozygous for gene trapped alleles may exhibit abnormal Purkinje cell dendrite morphology, a mild motor coordination defect that progressively worsens with age, hypoactivity, impaired glucose tolerance and/or insulin resistance.
- Transcript *Prex2*-202&203&204&205&206&208 may not be affected.
- The *Prex2* gene is located on the Chr1. 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)

Prex2 phosphatidylinositol-3,4,5-trisphosphate-dependent Rac exchange factor 2 [*Mus musculus* (house mouse)]

Gene ID: 109294, updated on 12-Aug-2019

Summary

- Official Symbol** Prex2 provided by [MGI](#)
- Official Full Name** phosphatidylinositol-3,4,5-trisphosphate-dependent Rac exchange factor 2 provided by [MGI](#)
- Primary source** [MGI:MGI:1923385](#)
- See related** [Ensembl:ENSMUSG00000048960](#)
- 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** Depdc2; P-Rex2; AI316880; AI553603; D430013K02; 6230420N16Rik; C030045D06Rik
- Expression** Broad expression in lung adult (RPKM 9.2), bladder adult (RPKM 4.1) and 17 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

Genomic context

Location: 1; 1 A2 [See Prex2 in Genome Data Viewer](#)

Exon count: 41

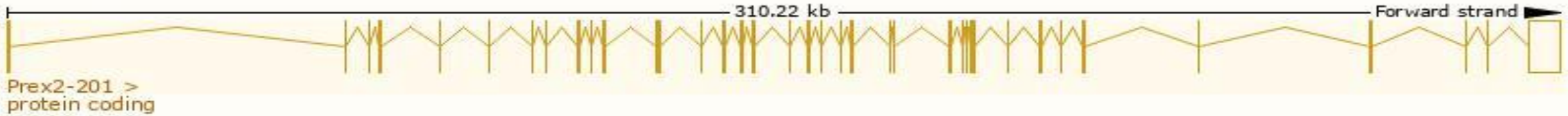
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	1	NC_000067.6 (10993273..11303683)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	1	NC_000067.5 (10983546..11293763)

Transcript information (Ensembl)

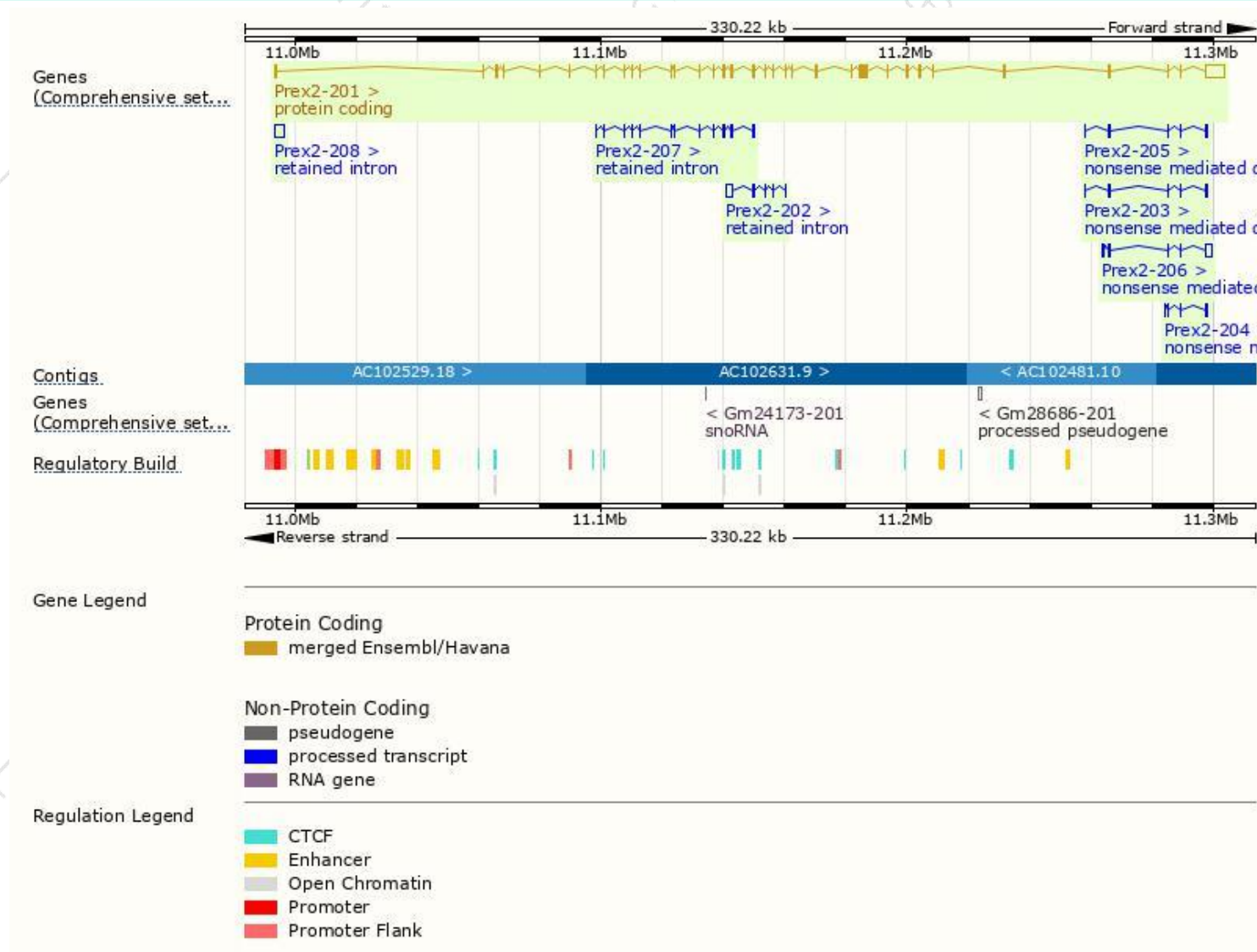
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Prex2-201	ENSMUST00000027056.11	11053	1598aa	Protein coding	CCDS48217	Q3LAC4	TSL:1 Gencode basic APPRIS P1
Prex2-206	ENSMUST00000189385.6	2449	24aa	Nonsense mediated decay	-	A0A087WS21	CDS 5' incomplete TSL:1
Prex2-204	ENSMUST00000188154.1	843	40aa	Nonsense mediated decay	-	A0A087WRD8	CDS 5' incomplete TSL:3
Prex2-203	ENSMUST00000187745.6	769	50aa	Nonsense mediated decay	-	A0A087WRV5	CDS 5' incomplete TSL:5
Prex2-205	ENSMUST00000188189.6	726	15aa	Nonsense mediated decay	-	A0A087WRG8	CDS 5' incomplete TSL:5
Prex2-208	ENSMUST00000190935.1	3084	No protein	Retained intron	-	-	TSL:NA
Prex2-202	ENSMUST00000187694.1	2949	No protein	Retained intron	-	-	TSL:1
Prex2-207	ENSMUST00000189822.1	1517	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Prex2-201* transcript,The transcription is shown below



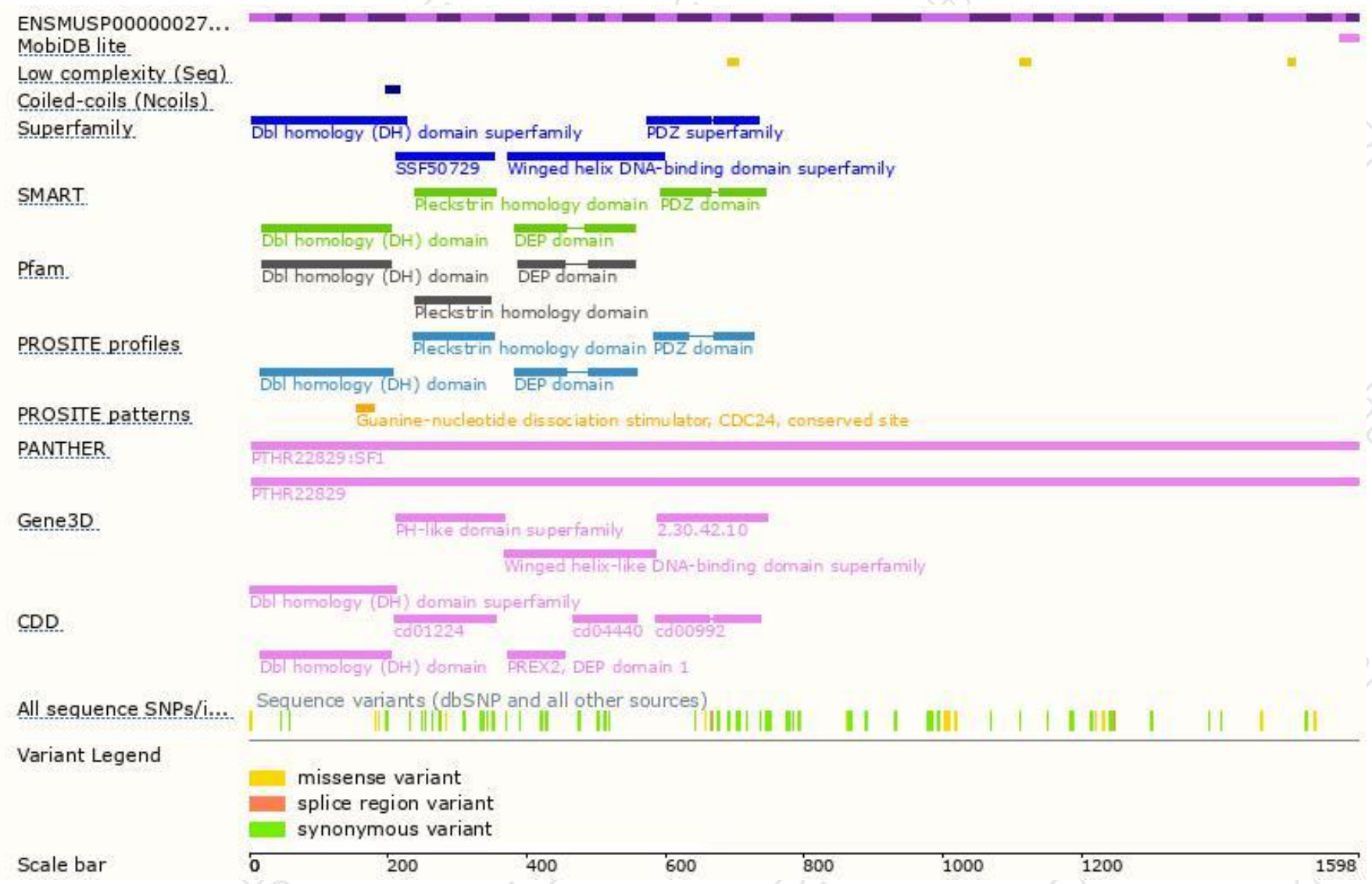
Genomic location distribution



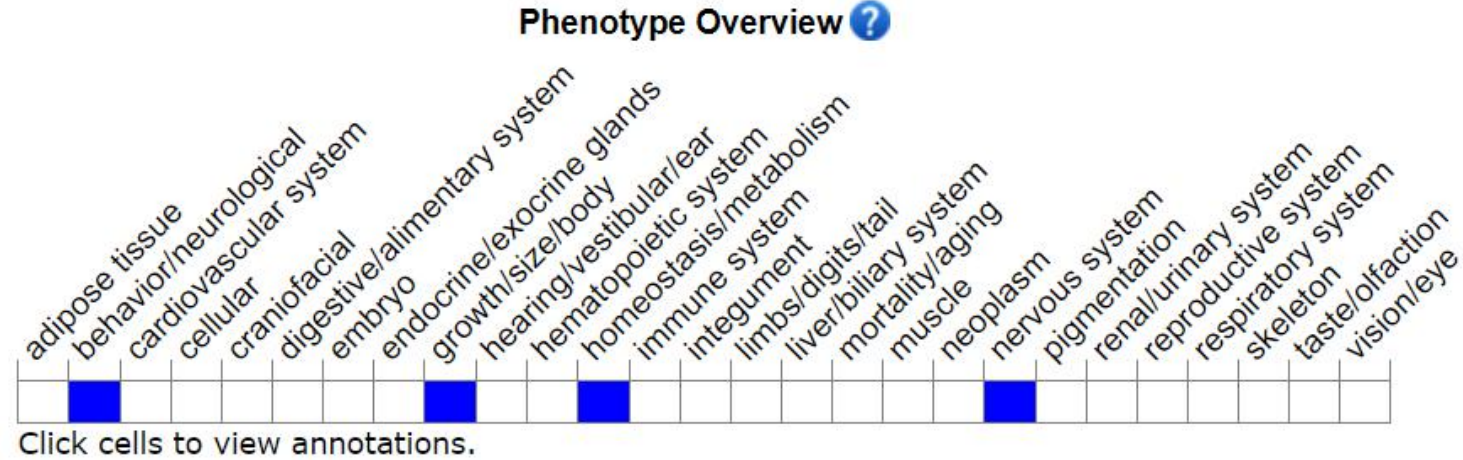
Protein domain



集萃药康
GemPharmatech



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 gene trapped alleles may exhibit abnormal Purkinje cell dendrite morphology, a mild motor coordination defect that progressively worsens with age, hypoactivity, impaired glucose tolerance and/or insulin resistance.

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

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