Pcdh11x Cas9-CKO Strategy

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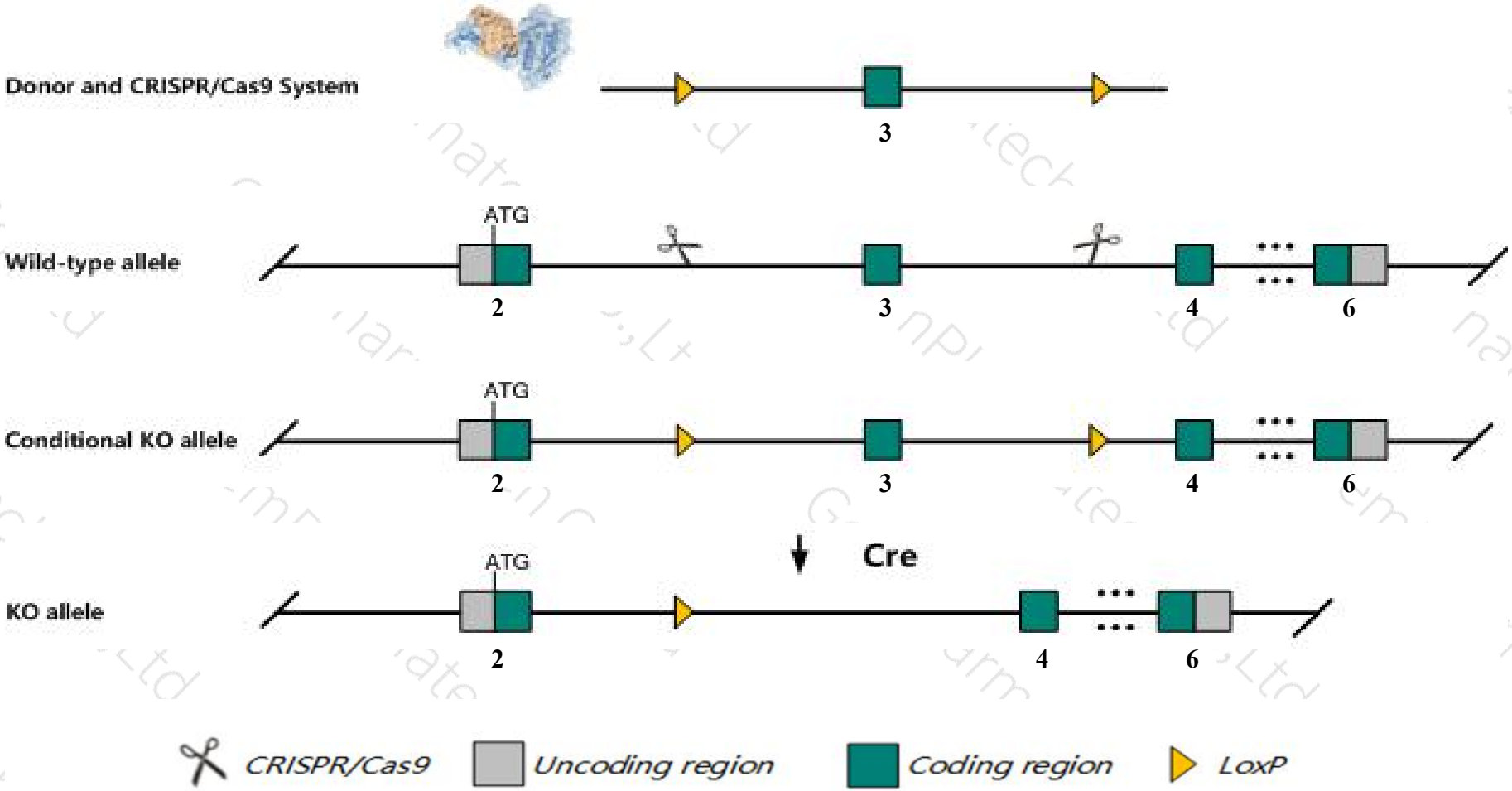
Project Overview

Project Name	***Pcdh11x***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pcdh11x* gene. The schematic diagram is as follows:



Technical routes

- The *Pcdh11x* gene has 9 transcripts. According to the structure of *Pcdh11x* gene, exon3 of *Pcdh11x-202* (ENSMUST00000113358.9) transcript is recommended as the knockout region.The region contains 2496bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Pcdh11x* 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

➢ The KO region deletes most of the coding sequence, but does not result in frameshift.

➢ The *Pcdh11x* gene is located on the ChrX. 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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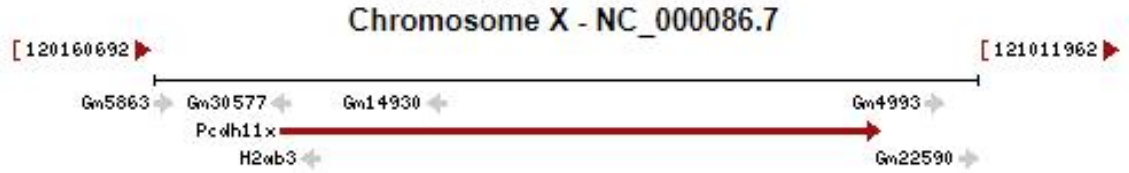
Pcdh11x protocadherin 11 X-linked [*Mus musculus* (house mouse)]

Gene ID: 245578, updated on 13-Mar-2020

Summary

Official Symbol	Pcdh11x provided by MGI
Official Full Name	protocadherin 11 X-linked provided by MGI
Primary source	MGI:MGI:2442849
See related	Ensembl:ENSMUSG00000034755
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	PCDHX; Pcdh11; PCDHX11
Summary	This gene encodes a member of the protocadherin family, and cadherin superfamily, of transmembrane proteins containing cadherin domains. The encoded protein may mediate cell-cell adhesion in neuronal tissues in the presence of calcium. Alternatively spliced transcript variants have been observed for this gene. [provided by RefSeq, Nov 2012]
Expression	Biased expression in CNS E18 (RPKM 1.6), whole brain E14.5 (RPKM 0.8) and 6 other tissues See more
Orthologs	human all

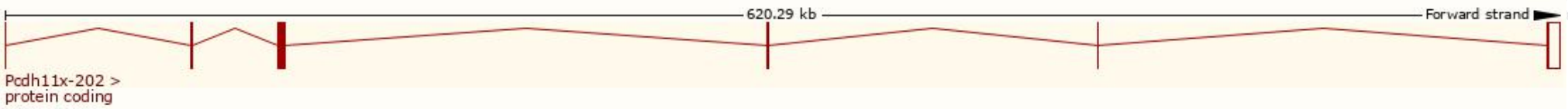


Transcript information（Ensembl）

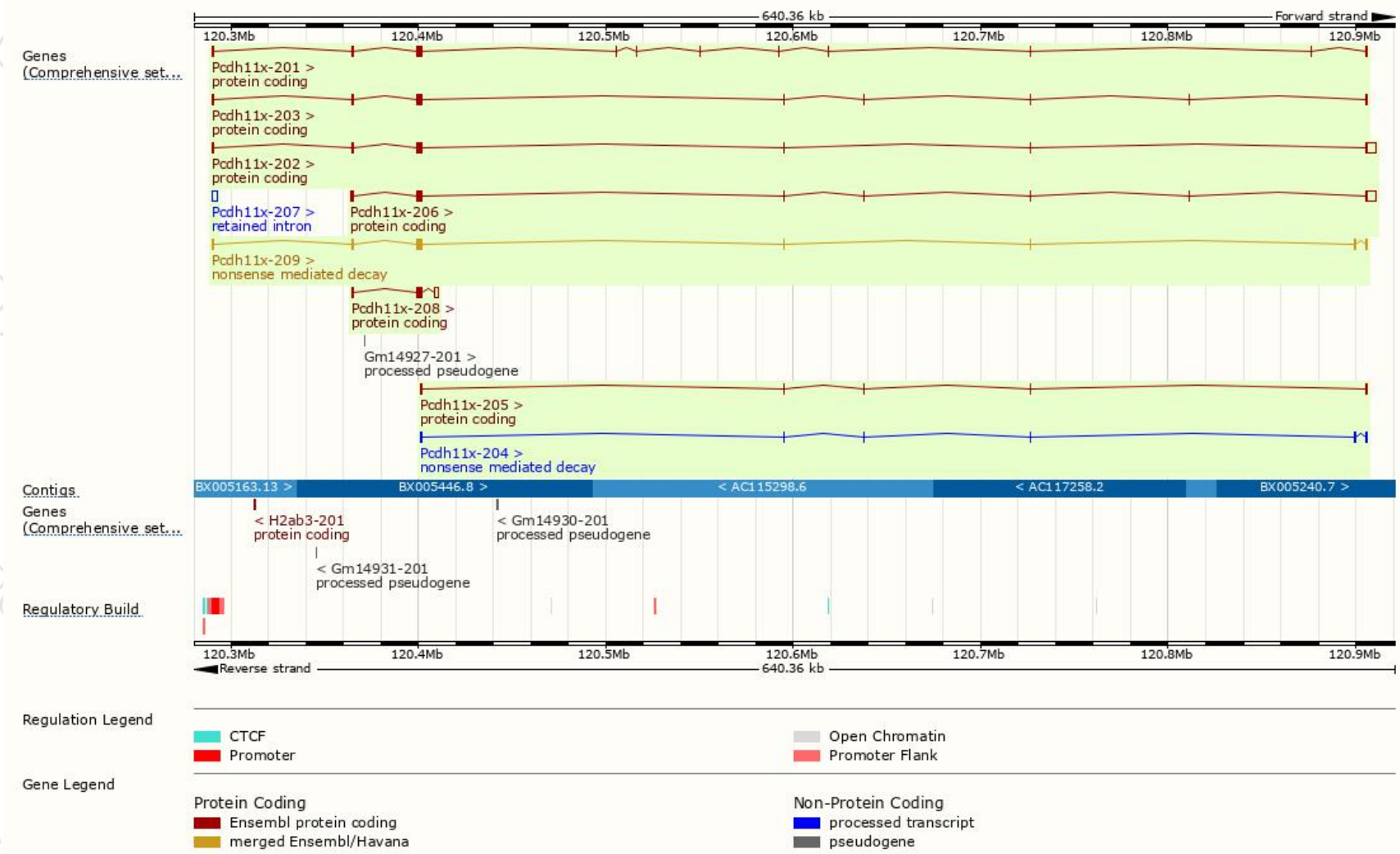
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pcdh11x-202	ENSMUST00000113358.9	8607	1320aa	Protein coding	CCDS72426	B1AZR7	TSL:5 GENCODE basic
Pcdh11x-206	ENSMUST00000192677.5	9097	1338aa	Protein coding	-	F6ZNL5	TSL:5 GENCODE basic APPRIS P5
Pcdh11x-208	ENSMUST00000193899.1	5394	1026aa	Protein coding	-	A0A0A6YWK0	TSL:5 GENCODE basic APPRIS ALT2
Pcdh11x-203	ENSMUST00000113364.9	4454	1338aa	Protein coding	-	F6ZNL5	TSL:5 GENCODE basic APPRIS P5
Pcdh11x-201	ENSMUST00000050239.15	4442	1334aa	Protein coding	-	E9Q622	TSL:5 GENCODE basic
Pcdh11x-205	ENSMUST00000191653.1	1491	496aa	Protein coding	-	Q2TJH7	CDS 5' incomplete TSL:1
Pcdh11x-209	ENSMUST00000195088.5	4402	1128aa	Nonsense mediated decay	-	A0JNT1	TSL:1
Pcdh11x-204	ENSMUST00000155223.6	1635	304aa	Nonsense mediated decay	-	Q2TJH9	CDS 5' incomplete TSL:1
Pcdh11x-207	ENSMUST00000192977.1	2145	No protein	Retained intron	-	-	TSL:NA

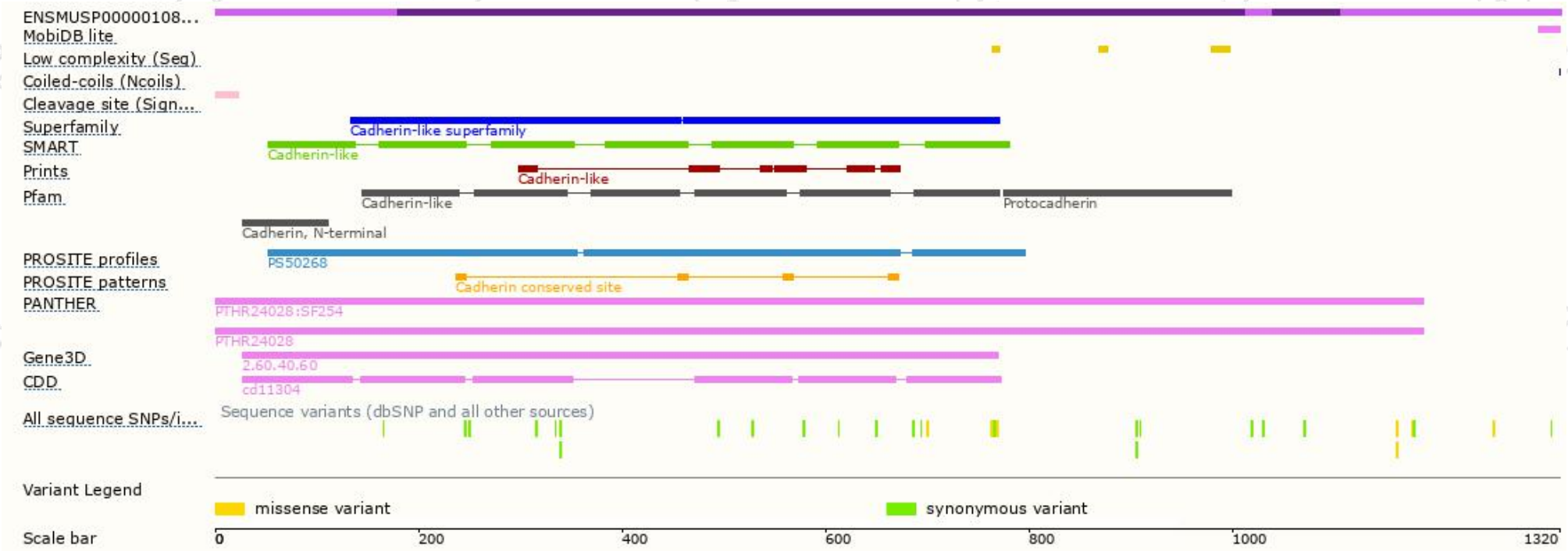
The strategy is based on the design of *Pcdh11x-202* transcript, the transcription is shown below:



Genomic location distribution



Protein domain



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

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