

Porcn Cas9-KO Strategy

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Project Overview

Project Name

Porcn

Project type

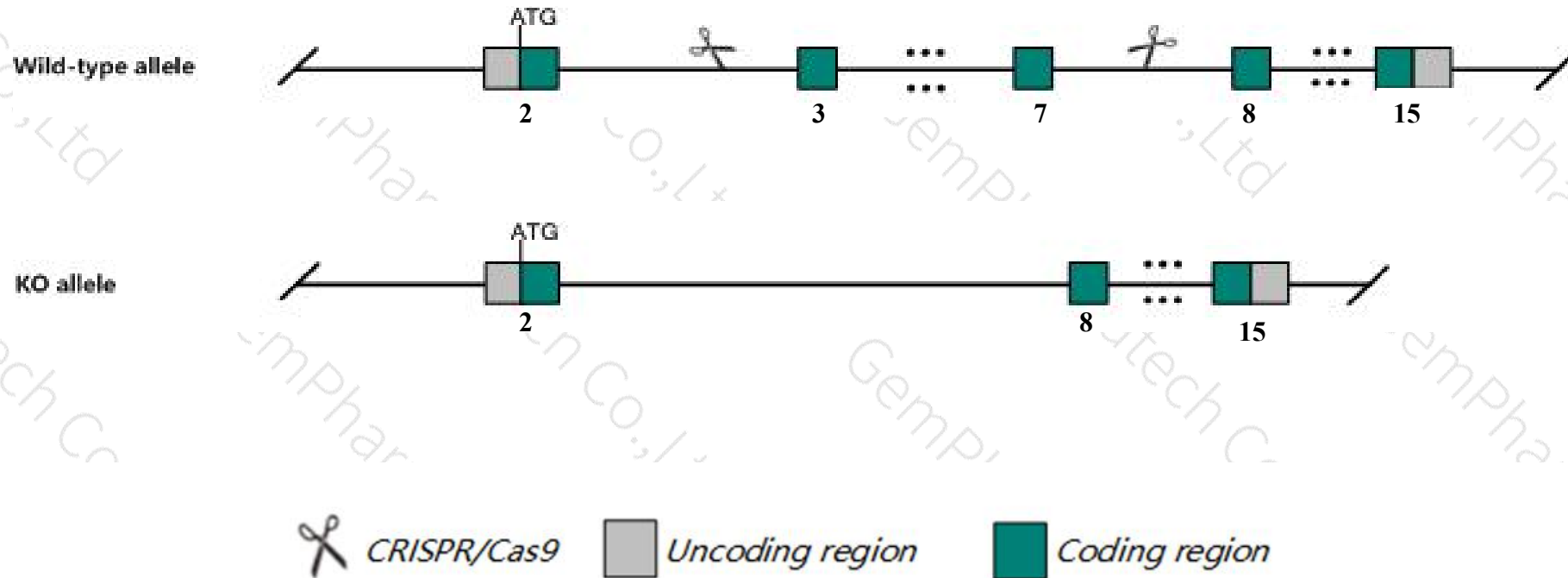
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Porcn* gene has 7 transcripts. According to the structure of *Porcn* gene, exon3-exon7 of *Porcn-201* (ENSMUST00000077595.11) transcript is recommended as the knockout region. The region contains 568bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Porcn* gene. The brief process is as follows: gRNA was transcribed in vitro. Cas9 and gRNA 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.

- According to the existing MGI data, Mice homozygous for a conditional allele activated in the epiblast exhibit abnormal mesoderm development, dermal atrophy, sternum hypoplasia, cleft palate, tail hypoplasia, absence of the autopod, abnormal hair follicle development, and perinatal lethality.
- The *Porcn* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Porcn porcupine O-acyltransferase [Mus musculus (house mouse)]

Gene ID: 53627, updated on 9-Apr-2019

Summary



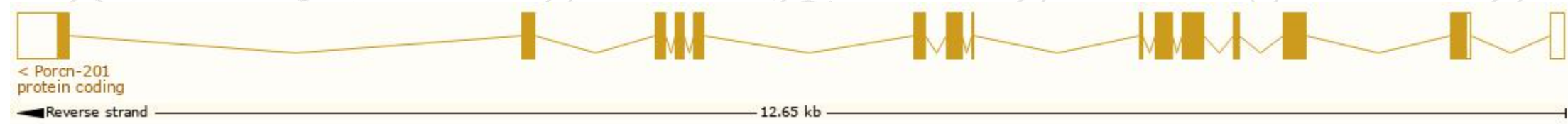
Official Symbol	Porcn provided by MGI
Official Full Name	porcupine O-acyltransferase provided by MGI
Primary source	MGI:MGI:1890212
See related	Ensembl:ENSMUSG00000031169
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2410004O13Rik, AW045557, DXHXS7465e, Mg61, Mporc, Ppn, mMg61, porc
Expression	Broad expression in cerebellum adult (RPKM 42.0), ovary adult (RPKM 21.2) and 21 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

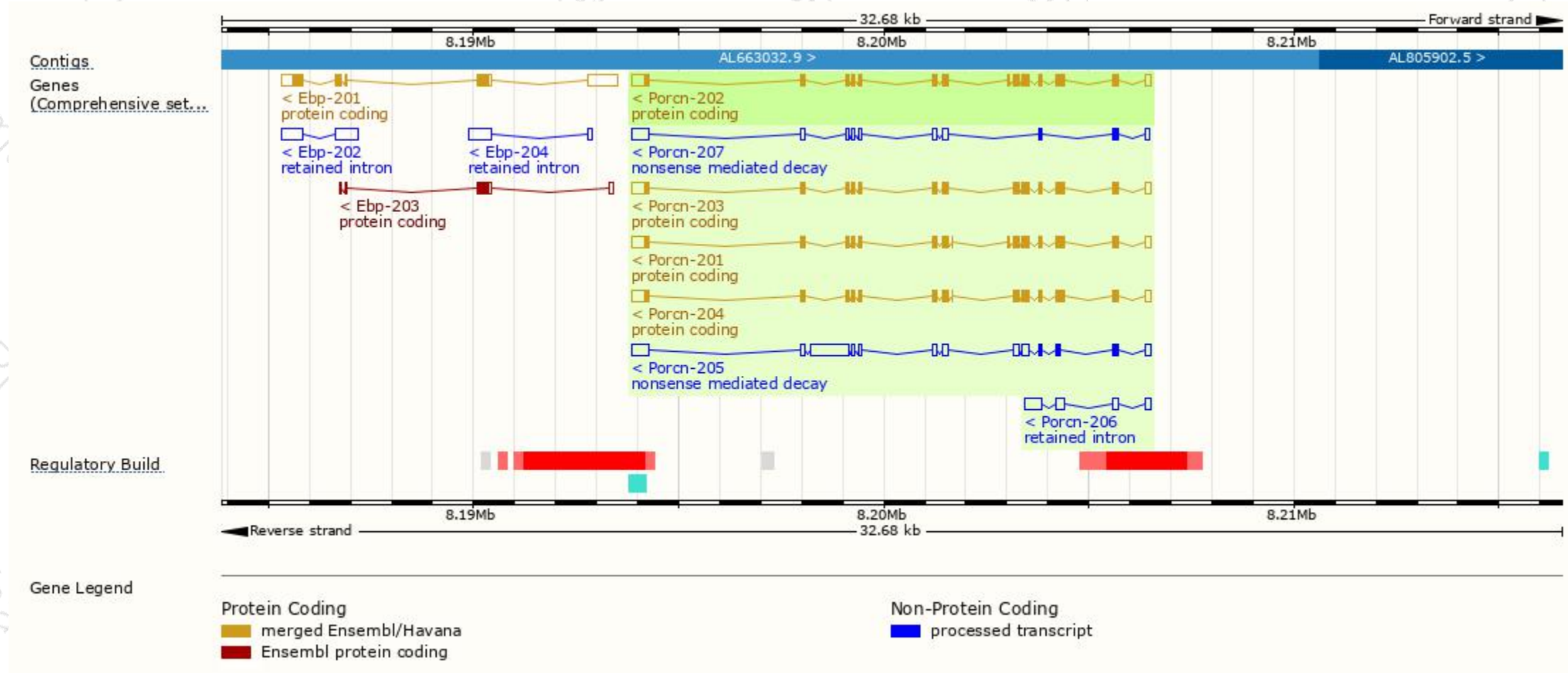
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Porcn-202	ENSMUST00000082320.11	1883	456aa	Protein coding	CCDS29993	Q9JJJ7	TSL:1 GENCODE basic APPRIS ALT 1
Porcn-201	ENSMUST00000077595.11	1872	461aa	Protein coding	CCDS29991	Q9JJJ7	TSL:1 GENCODE basic APPRIS P4
Porcn-204	ENSMUST00000089403.9	1854	455aa	Protein coding	CCDS29992	Q9JJJ7	TSL:1 GENCODE basic APPRIS ALT 1
Porcn-203	ENSMUST00000089402.9	1839	450aa	Protein coding	CCDS29990	Q9JJJ7	TSL:1 GENCODE basic APPRIS ALT 1
Porcn-205	ENSMUST00000122943.1	2622	86aa	Nonsense mediated decay	-	S4R2F8	TSL:1
Porcn-207	ENSMUST00000154695.7	1324	53aa	Nonsense mediated decay	-	S4R2I7	TSL:1
Porcn-206	ENSMUST00000139744.1	898	No protein	Retained intron	-	-	TSL:2

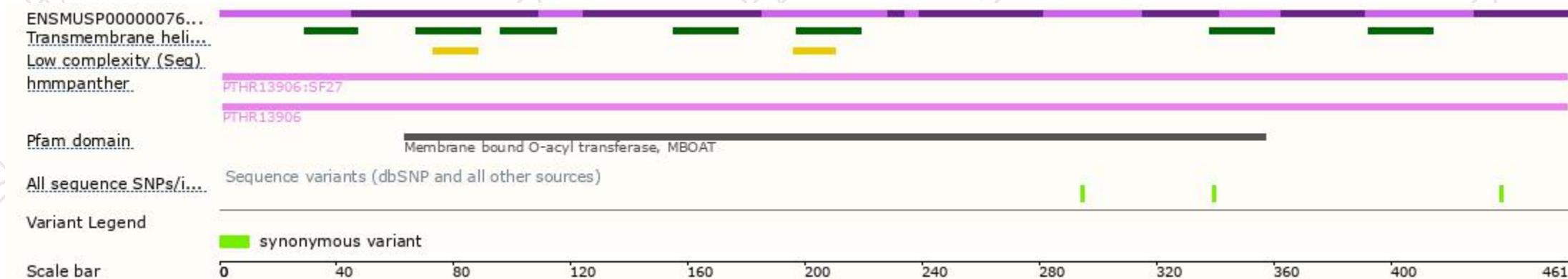
The strategy is based on the design of *Porcn-201* transcript,The transcription is shown below



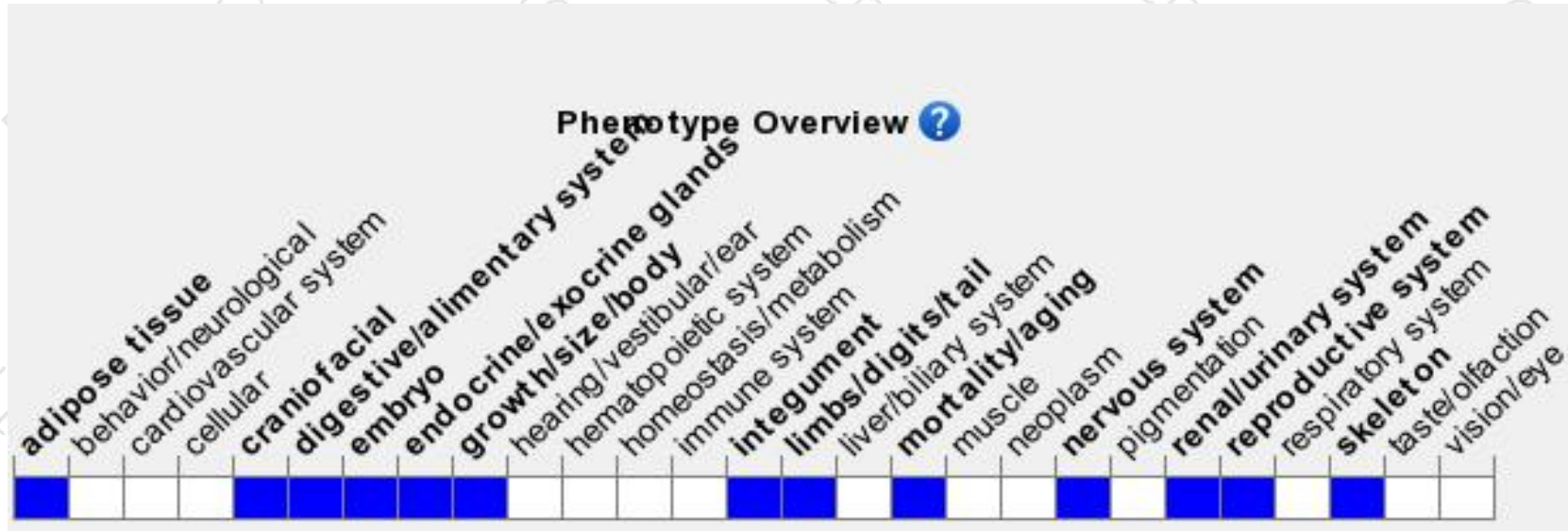
Genomic location distribution



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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