

Jph4 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Jph4

Project type

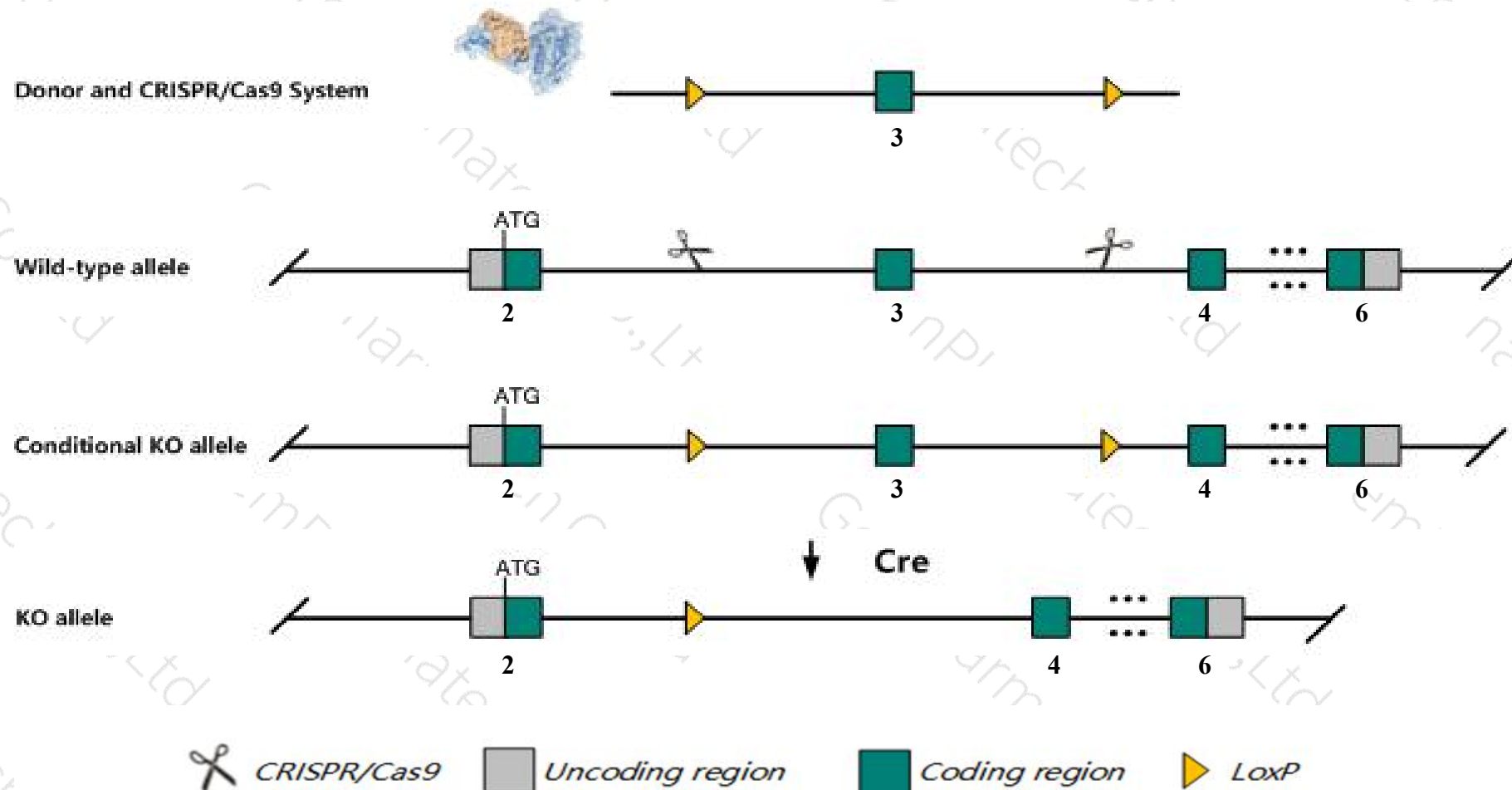
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Jph4* gene. The schematic diagram is as follows:



- The *Jph4* gene has 4 transcripts. According to the structure of *Jph4* gene, exon3 of *Jph4-201* (ENSMUST00000022819.12) transcript is recommended as the knockout region. The region contains 772bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Jph4* 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.

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit a reduction in endoplasmic reticulum Ca^{2+} content, store-operated Ca^{2+} entry and cytokine production in T cells and decreased ERK activation after TCR stimulation.
- The *Jph4* gene is located on the Chr14. 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)

Jph4 junctophilin 4 [*Mus musculus* (house mouse)]

Gene ID: 319984, updated on 13-Mar-2020

Summary

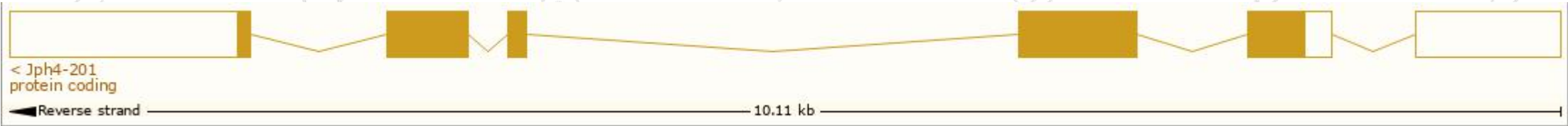
Official Symbol	Jph4 provided by MGI
Official Full Name	junctophilin 4 provided by MGI
Primary source	MGI:MGI:2443113
See related	Ensembl:ENSMUSG00000022208
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<i>Mus musculus</i>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	JP-4; JPHL1; 9330157P13Rik
Expression	Biased expression in cortex adult (RPKM 53.4), CNS E18 (RPKM 50.7) and 7 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

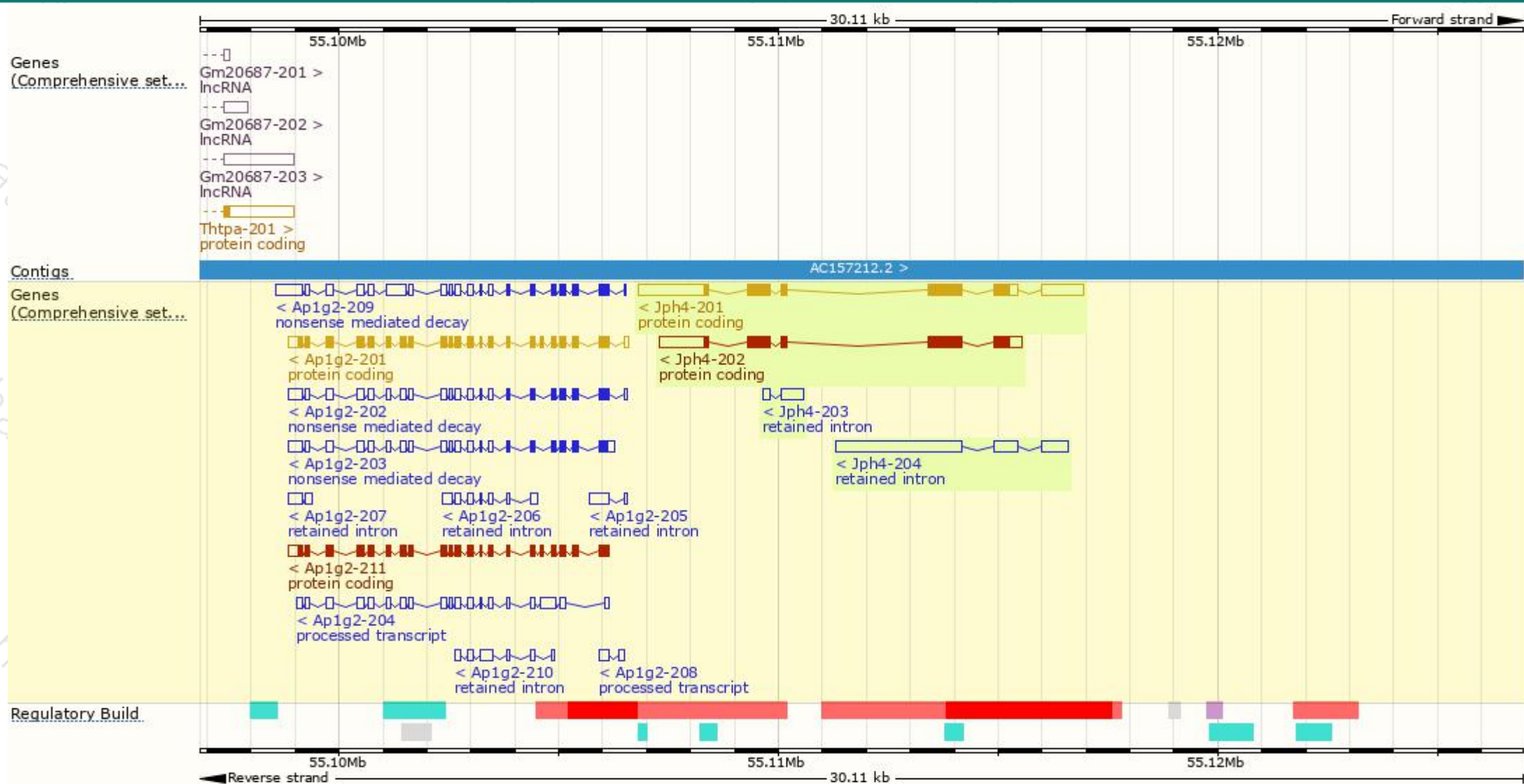
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Jph4-201	ENSMUST00000022819.12	4489	628aa	Protein coding	CCDS27109	Q80WT0	TSL:1 GENCODE basic APPRIS P1
Jph4-202	ENSMUST000000124493.1	3200	628aa	Protein coding	CCDS27109	Q80WT0	TSL:1 GENCODE basic APPRIS P1
Jph4-204	ENSMUST000000133954.2	4017	No protein	Retained intron	-	-	TSL:2
Jph4-203	ENSMUST000000132992.1	659	No protein	Retained intron	-	-	TSL:3

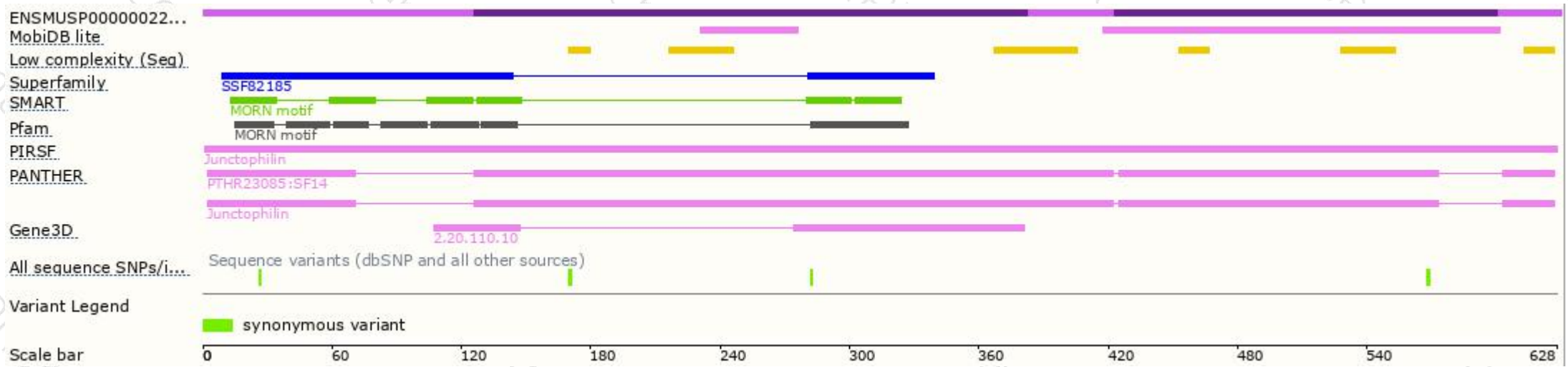
The strategy is based on the design of *Jph4-201* transcript,The transcription is shown below



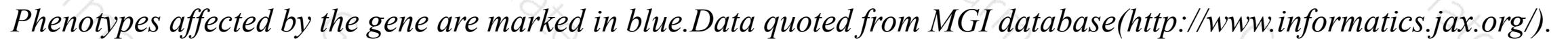
Genomic location distribution



Protein domain



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

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