

Hapln4 Cas9-CKO Strategy

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Project Overview

Project Name

Hapln4

Project type

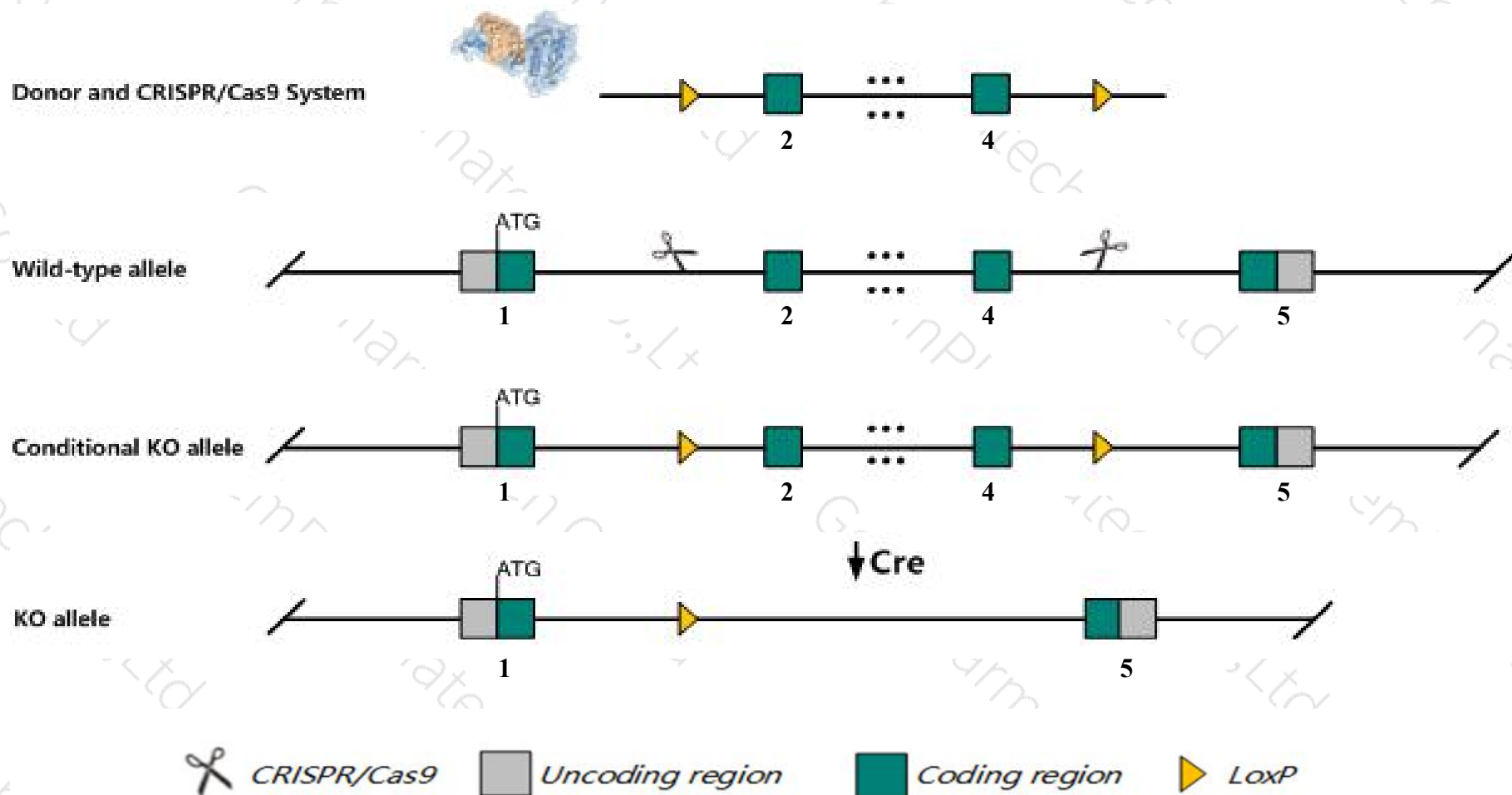
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hapln4* gene. The schematic diagram is as follows:



- The *Hapln4* gene has 3 transcripts. According to the structure of *Hapln4* gene, exon2-exon4 of *Hapln4-201* (ENSMUST00000007738.10) transcript is recommended as the knockout region. The region contains 808bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Hapln4* gene. The brief process is as follows: gRNA was transcribed in vitro, donor was constructed. Cas9, gRNA 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

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit attenuated perineuronal nets and synapses.
- The *Hapln4* gene is located on the Chr8. 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)

Hapln4 hyaluronan and proteoglycan link protein 4 [*Mus musculus* (house mouse)]

Gene ID: 330790, updated on 5-Feb-2019

Summary

Official Symbol Hapln4 provided by [MGI](#)
Official Full Name hyaluronan and proteoglycan link protein 4 provided by [MGI](#)
Primary source [MGI:MGI:2679531](#)
See related [Ensembl:ENSMUSG00000007594](#)
Gene type protein coding
RefSeq status PROVISIONAL
Organism [Mus musculus](#)
Lineage Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as Lpr4; Bral2; 9330174O11
Expression Biased expression in cerebellum adult (RPKM 30.4), cortex adult (RPKM 16.2) and 2 other tissues [See more](#)
Orthologs [human](#) [all](#)

Genomic context

Location: 8; 8 B3.3

See Hapln4 in [Genome Data Viewer](#)

Exon count: 5

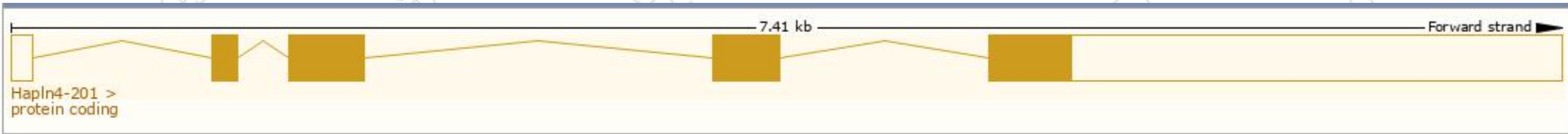
Annotation release	Status	Assembly	Chr	Location
106	current	GRCm38.p4 (GCF_000001635.24)	8	NC_000074.6 (70083529..70090862)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	8	NC_000074.5 (72607428..72614761)

Transcript information (Ensembl)

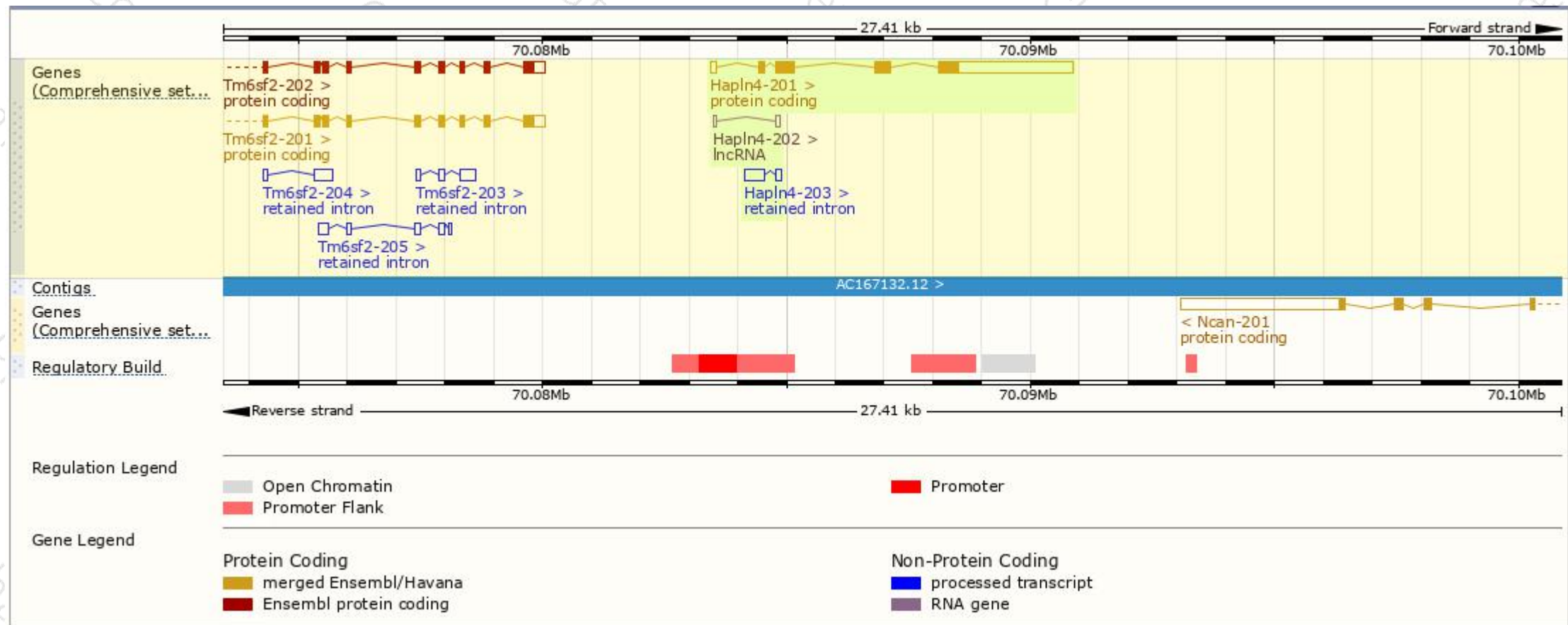
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hapln4-201	ENSMUST00000007738.10	3648	400aa	Protein coding	CCDS40365	Q80WM4	TSL:1 GENCODE basic APPRIS P1
Hapln4-202	ENSMUST00000212006.1	159	No protein	lncRNA	-	-	TSL:2
Hapln4-203	ENSMUST00000213092.1	503	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Hapln4-201* transcript,The transcription is shown below



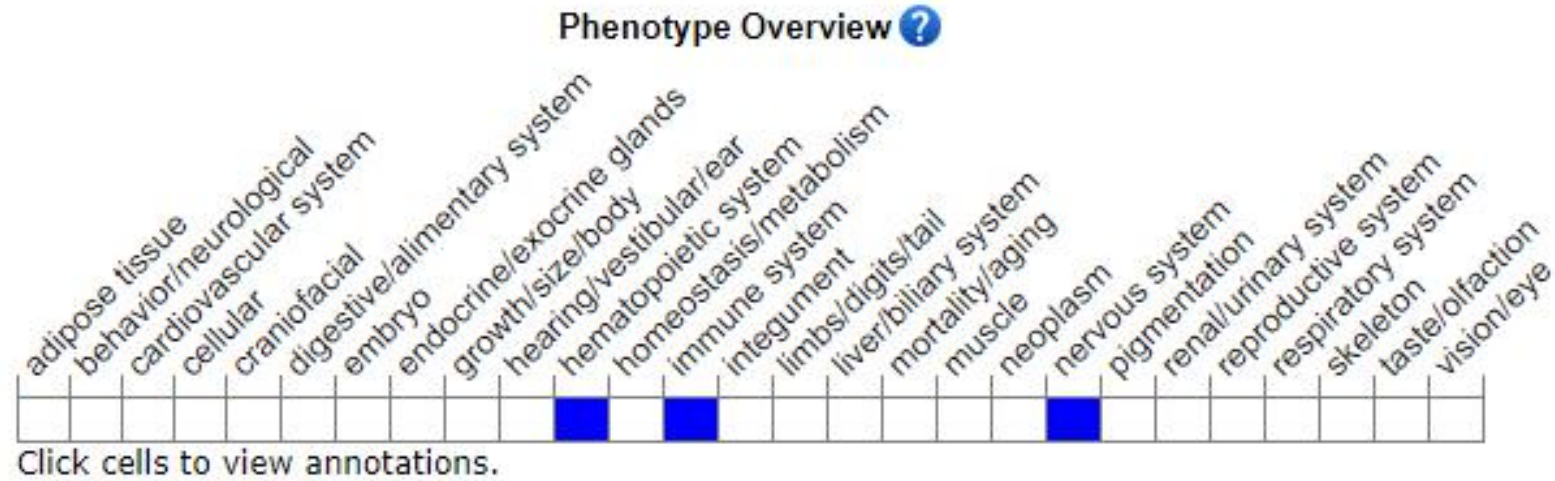
Genomic location distribution



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/>).

Mice homozygous for a knock-out allele exhibit attenuated perineuronal nets and synapses.

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

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