

Neil3 Cas9-CKO Strategy

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Reviewer:

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Design Date:

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Project Overview

Project Name

Neil3

Project type

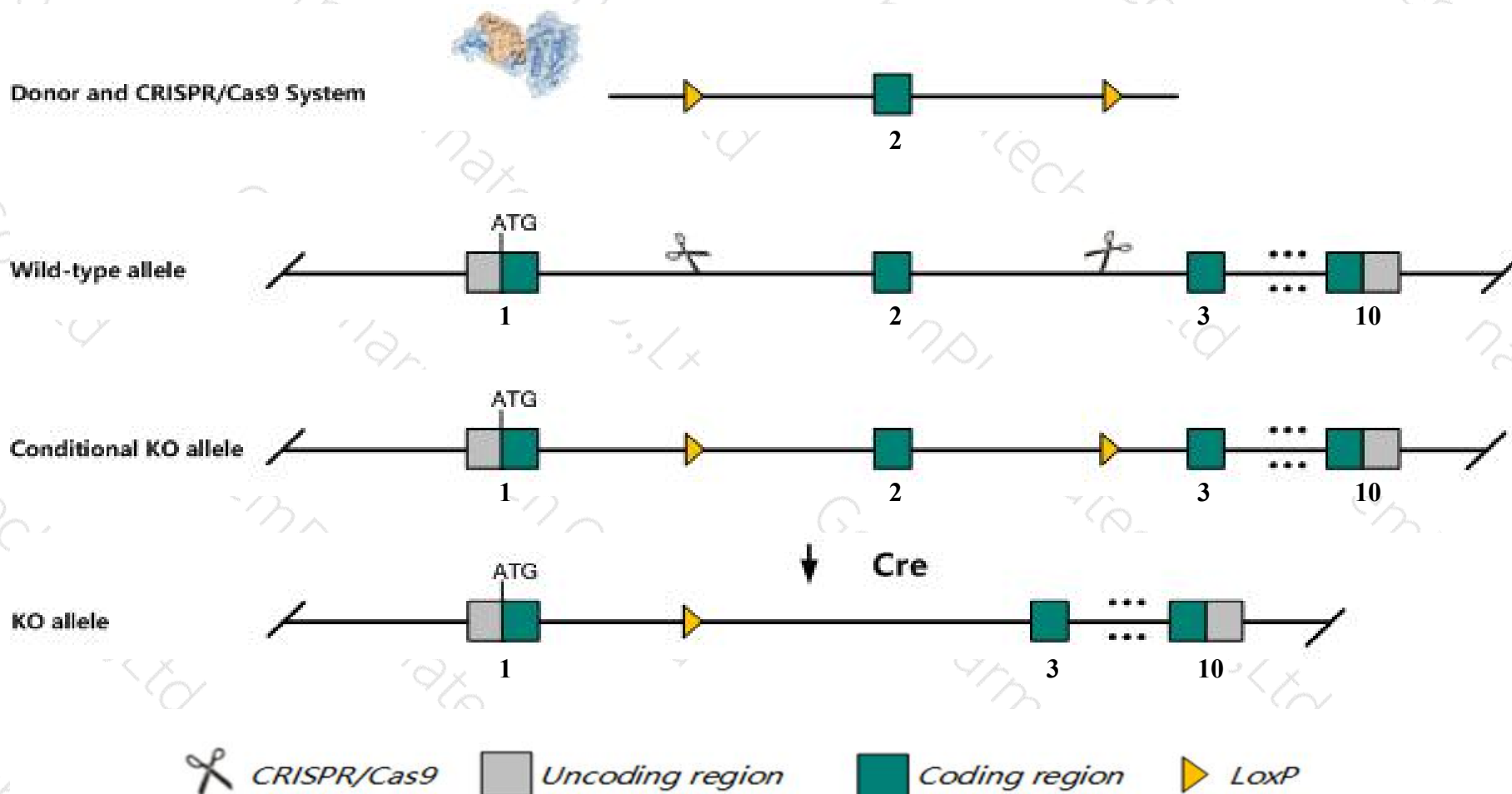
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Neil3* gene. The schematic diagram is as follows:



- The *Neil3* gene has 7 transcripts. According to the structure of *Neil3* gene, exon2 of *Neil3-201* (ENSMUST00000047768.10) transcript is recommended as the knockout region. The region contains 125bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Neil3* 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 decreased neurogenesis following hypoxia-ischemia.
- The *Neil3* 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)

Neil3 nei like 3 (E. coli) [Mus musculus (house mouse)]

Gene ID: 234258, updated on 31-Jan-2019

Summary



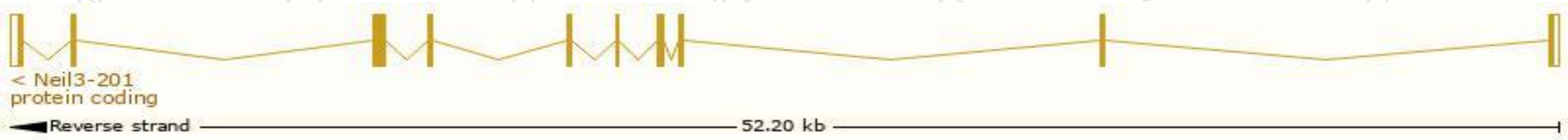
Official Symbol	Neil3 provided by MGI
Official Full Name	nei like 3 (E. coli) provided by MGI
Primary source	MGI:MGI:2384588
See related	Ensembl:ENSMUSG00000039396
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI449477, BC034753, C85903
Expression	Biased expression in liver E14 (RPKM 18.3), liver E14.5 (RPKM 15.0) and 9 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

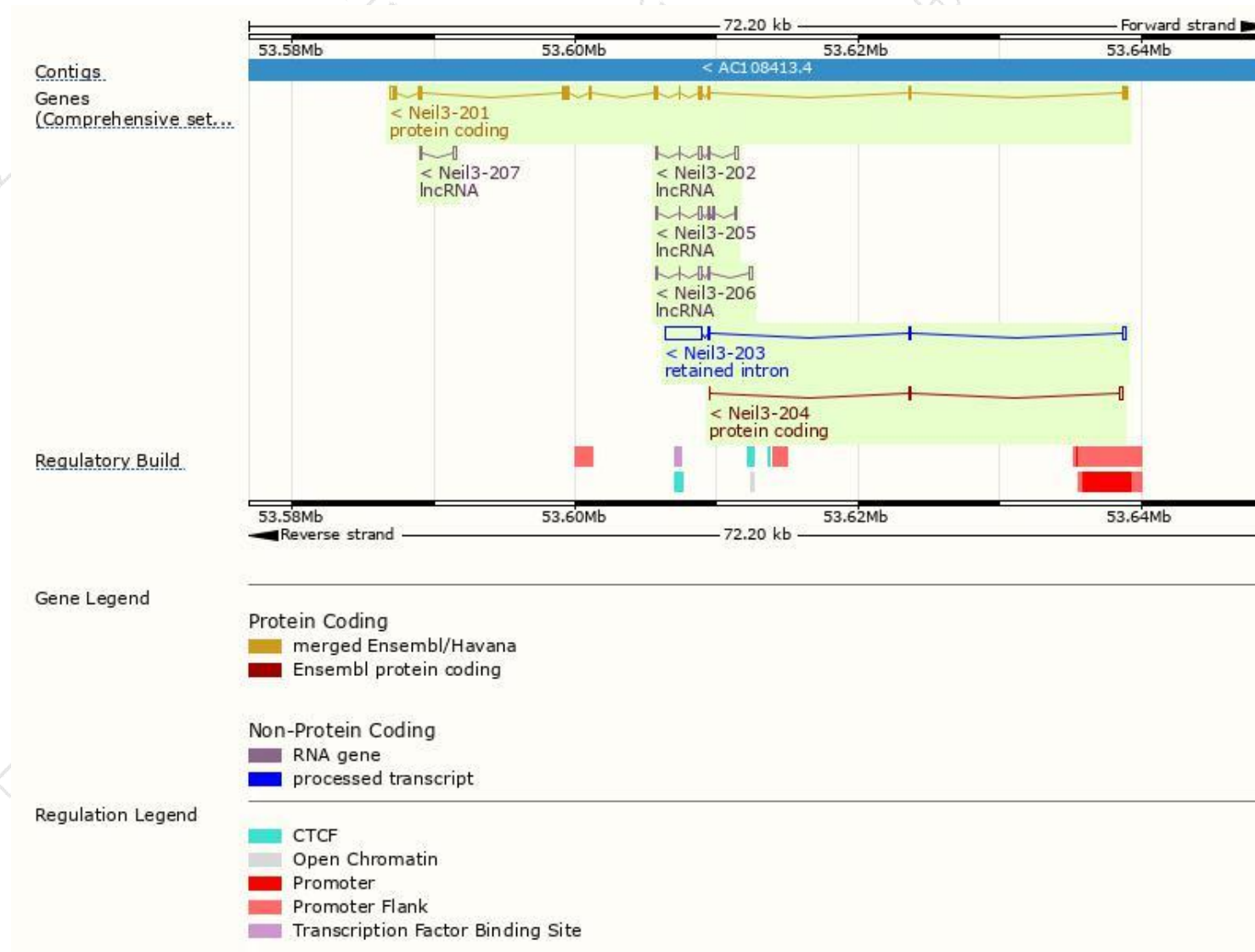
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Neil3-201	ENSMUST00000047768.10	2253	606aa	Protein coding	CCDS22305	Q8K203	TSL:1 GENCODE basic APPRIS P1
Neil3-204	ENSMUST00000135443.1	373	49aa	Protein coding	-	D3Z1T7	CDS 3' incomplete TSL:3
Neil3-203	ENSMUST00000130656.1	3085	No protein	Retained intron	-	-	TSL:1
Neil3-205	ENSMUST00000149053.7	814	No protein	lncRNA	-	-	TSL:3
Neil3-202	ENSMUST00000126157.7	783	No protein	lncRNA	-	-	TSL:2
Neil3-206	ENSMUST00000153267.2	782	No protein	lncRNA	-	-	TSL:2
Neil3-207	ENSMUST00000211404.1	327	No protein	lncRNA	-	-	TSL:3

The strategy is based on the design of *Neil3-201* transcript,The transcription is shown below



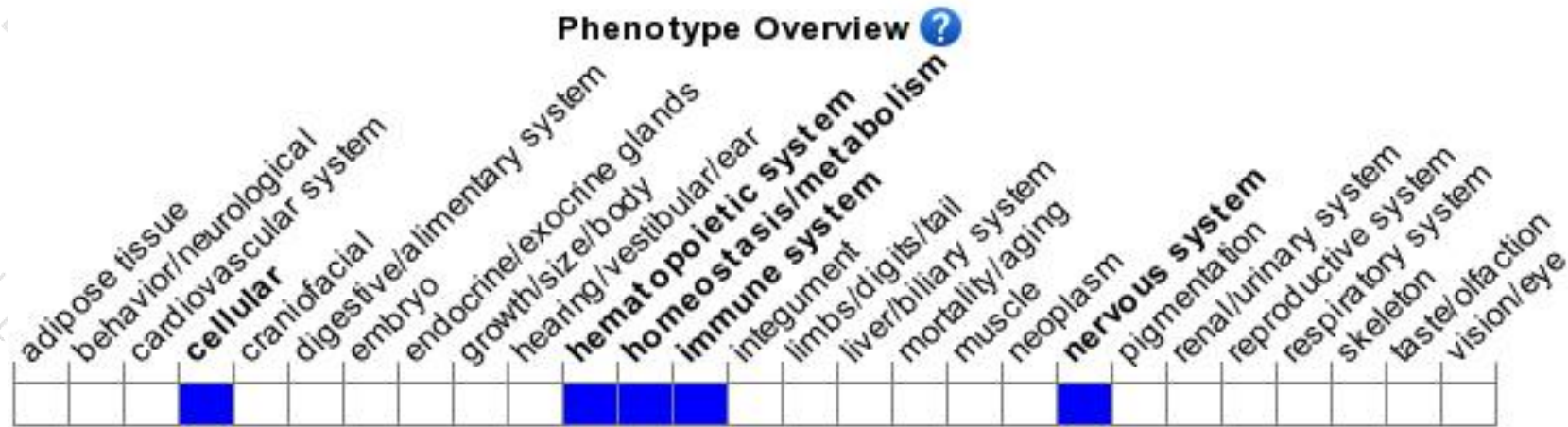
Genomic location distribution



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/>).

According to the existing MGI data, Mice homozygous for a knock-out allele exhibit decreased neurogenesis following hypoxia-ischemia.

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

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