Nfe2l3 Cas9-CKO Strategy

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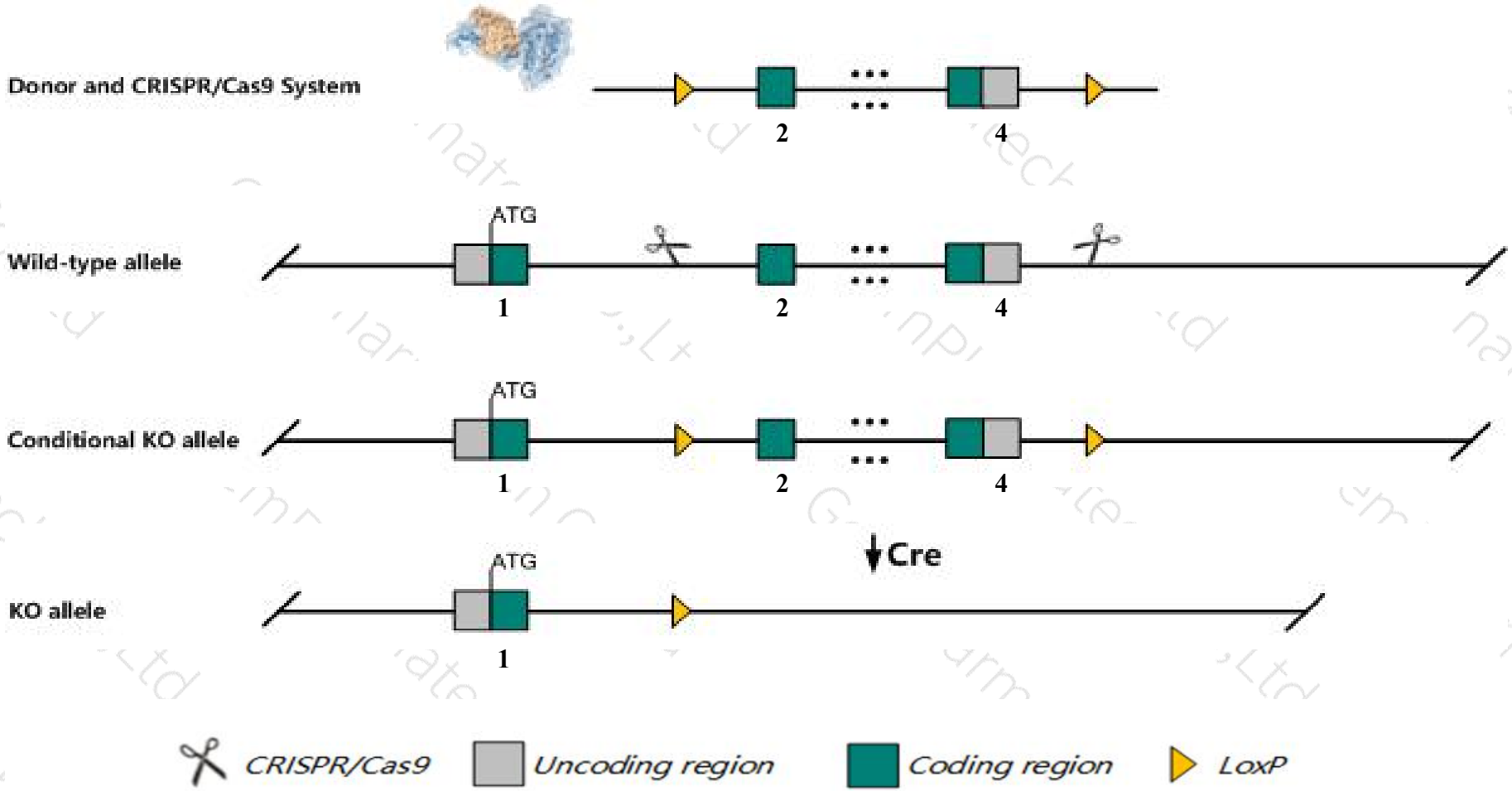
Design Date: 2020-2-28

Project Overview

Project Name	***Nfe2l3***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nfe2l3* gene. The schematic diagram is as follows:



Technical routes

- The *Nfe2l3* gene has 3 transcripts. According to the structure of *Nfe2l3* gene, exon2-exon4 of *Nfe2l3-201* (ENSMUST00000005103.11) transcript is recommended as the knockout region.The region contains most of the coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Nfe2l3* 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

➢ According to the existing MGI data, mice homozygous for disruptions in this gene display a normal phenotype.

➢ The *Nfe2l3* gene is located on the Chr6. 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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Nfe2l3 nuclear factor, erythroid derived 2, like 3 [*Mus musculus* (house mouse)]

Gene ID: 18025, updated on 17-Sep-2019

Summary

Official Symbol	Nfe2l3 provided by MGI
Official Full Name	nuclear factor, erythroid derived 2, like 3 provided by MGI
Primary source	MGI:MGI:1339958
See related	Ensembl:ENSMUSG00000029832
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	Nrf3
Expression	Biased expression in bladder adult (RPKM 16.5), CNS E18 (RPKM 5.1) and 13 other tissues See more
Orthologs	human all

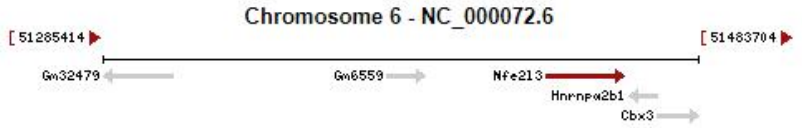
Genomic context

Location: 6 B3; 6 24.84 cM

See Nfe2l3 in Genome Data Viewer

Exon count: 4

Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	6	NC_000072.6 (51432669..51458772)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	6	NC_000072.5 (51382669..51408767)



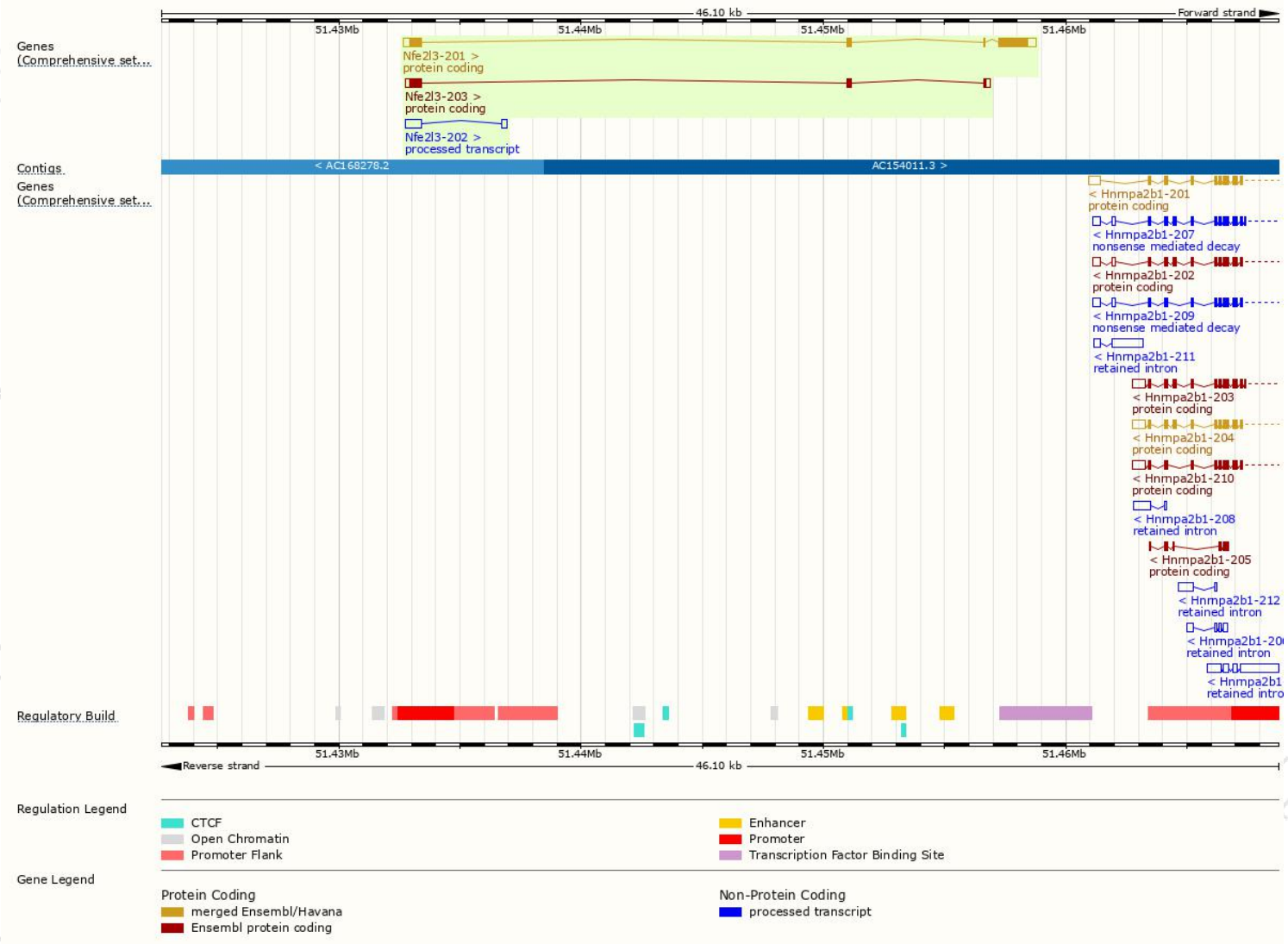
Transcript information（Ensembl）

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

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nfe2l3-201	ENSMUST00000005103.11	2544	660aa	Protein coding	CCDS20134	Q3UZC1 Q9WTM4	TSL:1 GENCODE basic APPRIS P1
Nfe2l3-203	ENSMUST00000160133.1	1125	264aa	Protein coding	-	E9PWE6	TSL:1 GENCODE basic
Nfe2l3-202	ENSMUST00000061507.8	895	No protein	Processed transcript	-	-	TSL:1

The strategy is based on the design of *Nfe2l3-201* 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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