

Nprl3 Cas9-CKO Strategy

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Reviewer:

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Design Date:

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Project Overview

Project Name

Nprl3

Project type

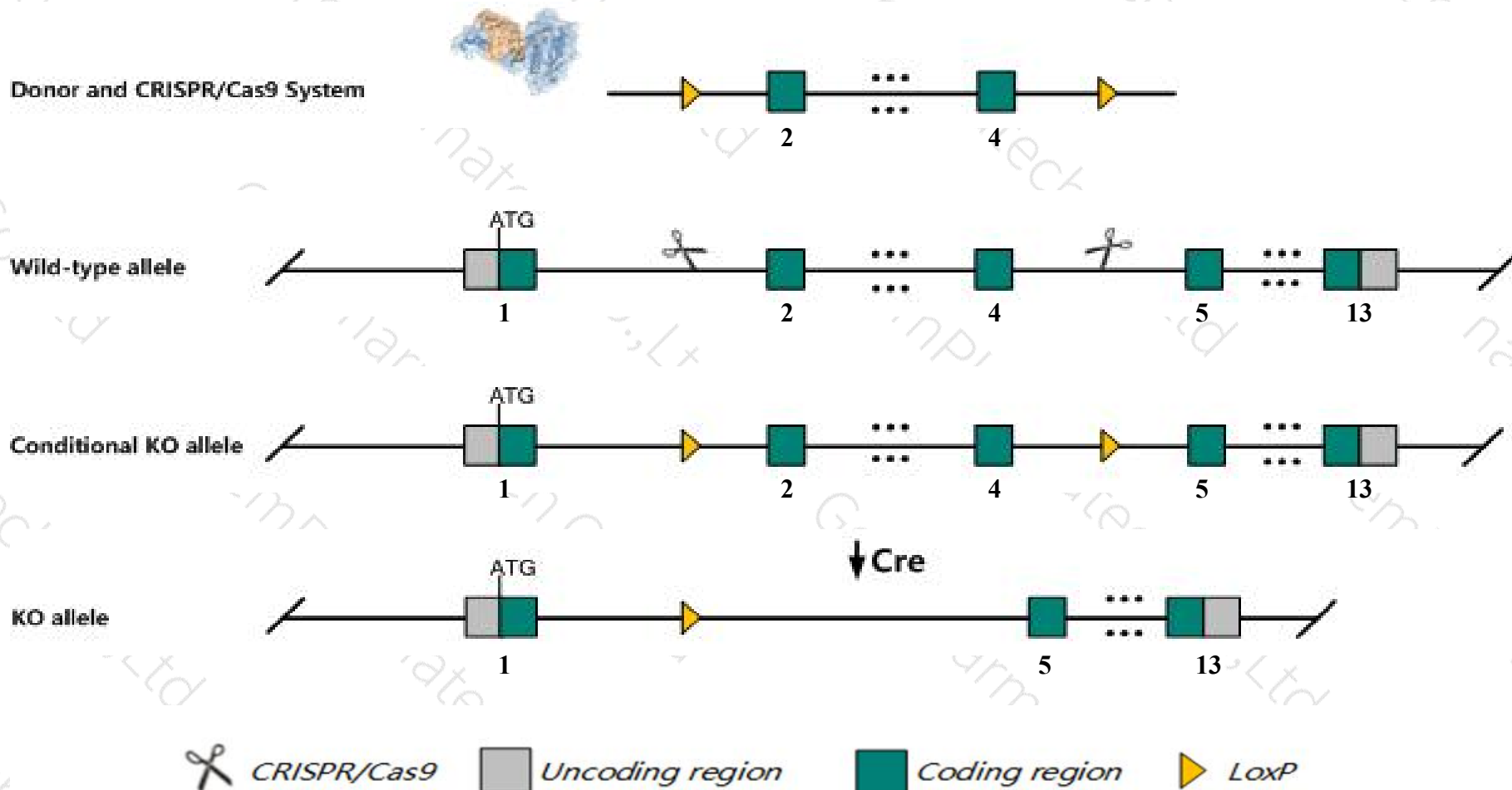
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nprl3* gene. The schematic diagram is as follows:



- The *Nprl3* gene has 16 transcripts. According to the structure of *Nprl3* gene, exon2-exon4 of *Nprl3*-201 (ENSMUST00000020530.11) transcript is recommended as the knockout region. The region contains 275bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Nprl3* 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, This gene is deleted in the the Hba^{th-J} mutation.
- The *Nprl3* gene is located on the Chr11. 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)

Nprl3 nitrogen permease regulator-like 3 [Mus musculus (house mouse)]

Gene ID: 17168, updated on 31-Jan-2019

Summary



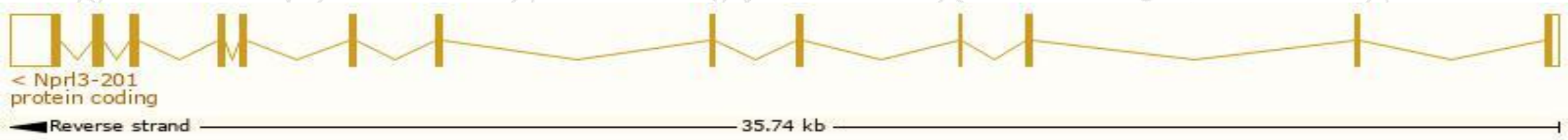
Official Symbol	Nprl3 provided by MGI
Official Full Name	nitrogen permease regulator-like 3 provided by MGI
Primary source	MGI:MGI:109258
See related	Ensembl:ENSMUSG00000020289
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Aag, CGTHBA, HS-26, HS-40, Mare, Phg, Prox1, m(alpha)RE
Expression	Ubiquitous expression in adrenal adult (RPKM 39.2), ovary adult (RPKM 30.3) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

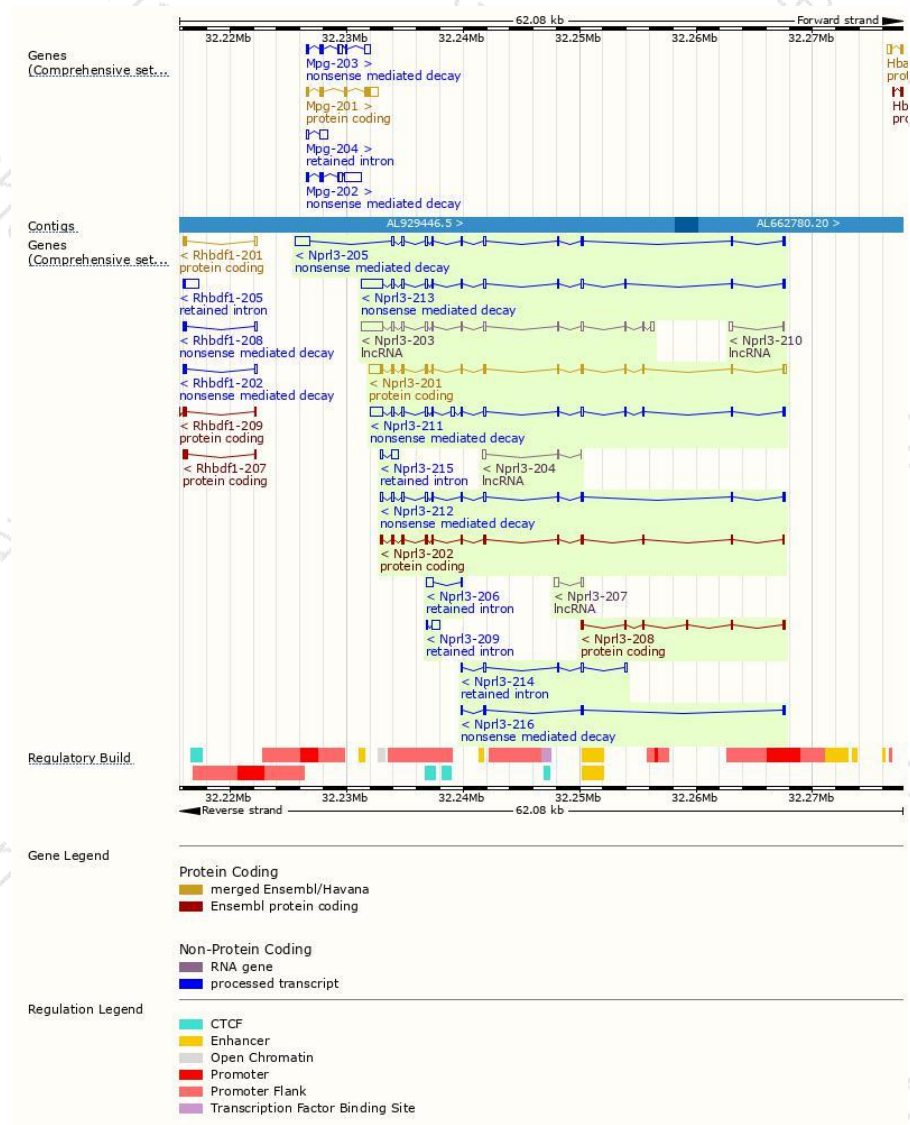
The gene has 16 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nprl3-201	ENSMUST0000020530.11	2865	569aa	Protein coding	CCDS24521	Q8VIJ8	TSL:1 GENCODE basic APPRIS P1
Nprl3-202	ENSMUST00000109389.8	1642	544aa	Protein coding	-	A7M7S2	TSL:5 GENCODE basic
Nprl3-208	ENSMUST00000129010.1	623	182aa	Protein coding	-	A2AAX8	CDS 3' incomplete TSL:3
Nprl3-213	ENSMUST00000141859.7	3417	77aa	Nonsense mediated decay	-	F2Z3Y4	TSL:1
Nprl3-211	ENSMUST00000136903.7	2945	58aa	Nonsense mediated decay	-	F2Z404	TSL:5
Nprl3-205	ENSMUST00000124640.7	2696	69aa	Nonsense mediated decay	-	F2Z3V7	TSL:1
Nprl3-212	ENSMUST00000137950.7	1602	69aa	Nonsense mediated decay	-	F2Z3V7	TSL:5
Nprl3-216	ENSMUST00000149526.1	537	80aa	Nonsense mediated decay	-	D6RGB2	TSL:5
Nprl3-209	ENSMUST00000129573.1	762	No protein	Retained intron	-	-	TSL:3
Nprl3-214	ENSMUST00000146890.7	713	No protein	Retained intron	-	-	TSL:3
Nprl3-206	ENSMUST00000125256.1	705	No protein	Retained intron	-	-	TSL:3
Nprl3-215	ENSMUST00000148636.1	680	No protein	Retained intron	-	-	TSL:2
Nprl3-203	ENSMUST00000109390.7	3531	No protein	lncRNA	-	-	TSL:1
Nprl3-207	ENSMUST00000127657.1	602	No protein	lncRNA	-	-	TSL:3
Nprl3-204	ENSMUST00000123411.1	411	No protein	lncRNA	-	-	TSL:3
Nprl3-210	ENSMUST00000132856.1	406	No protein	lncRNA	-	-	TSL:2

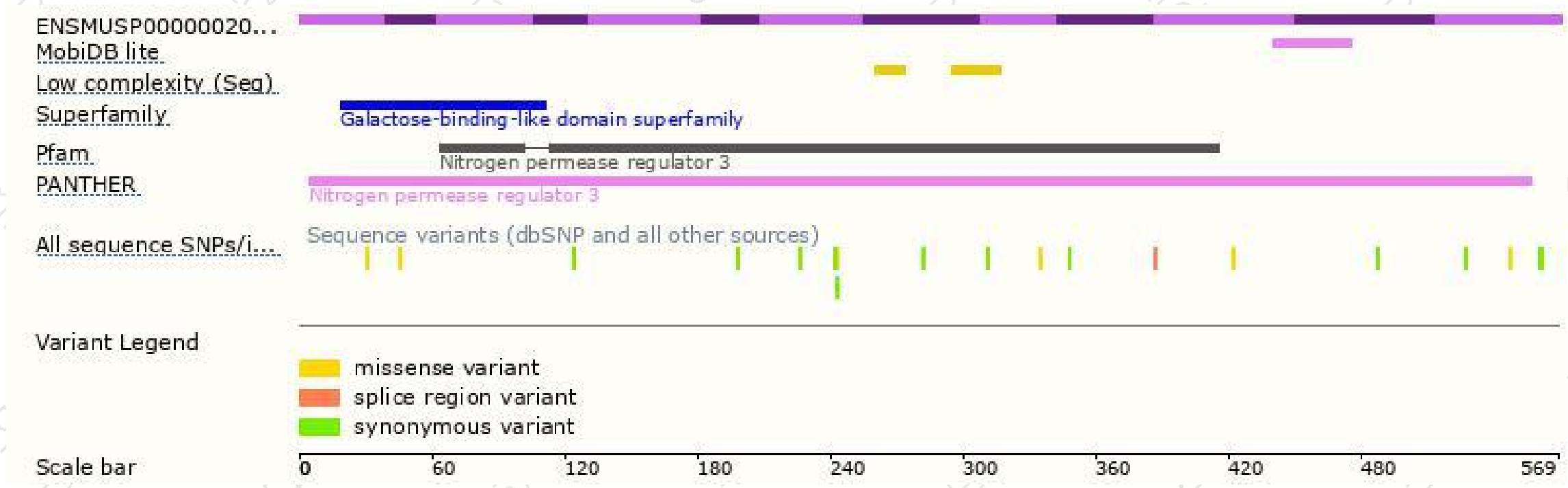
The strategy is based on the design of *Nprl3-201* transcript,The transcription is shown below



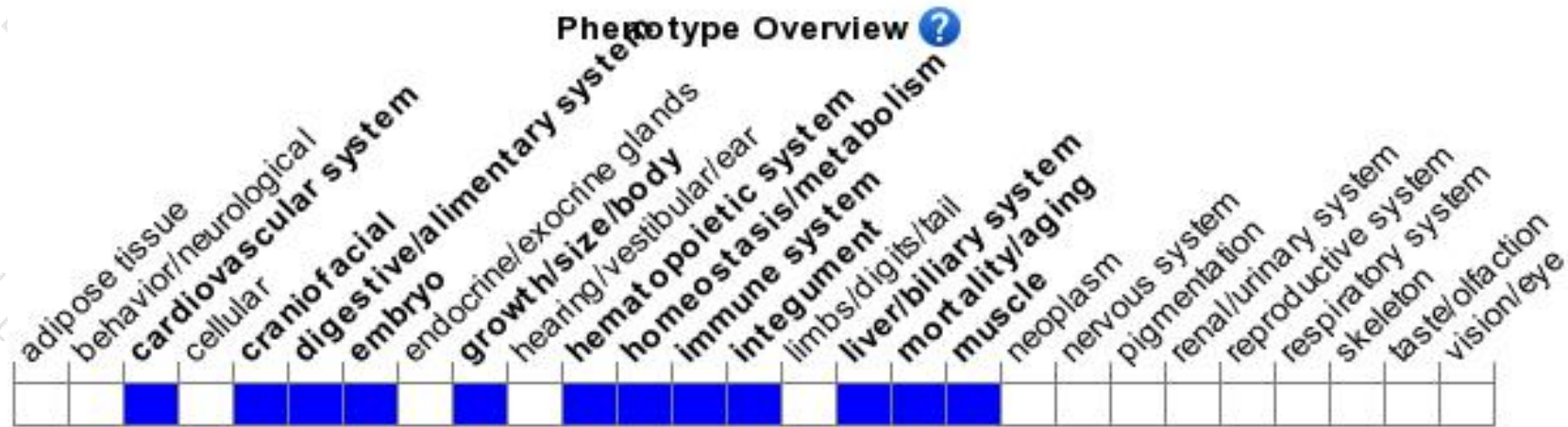
Genomic location distribution



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, This gene is deleted in the the Hba^{th-J} mutation.

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

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