

Nphp4 Cas9-KO Strategy

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Project Overview

Project Name

Nphp4

Project type

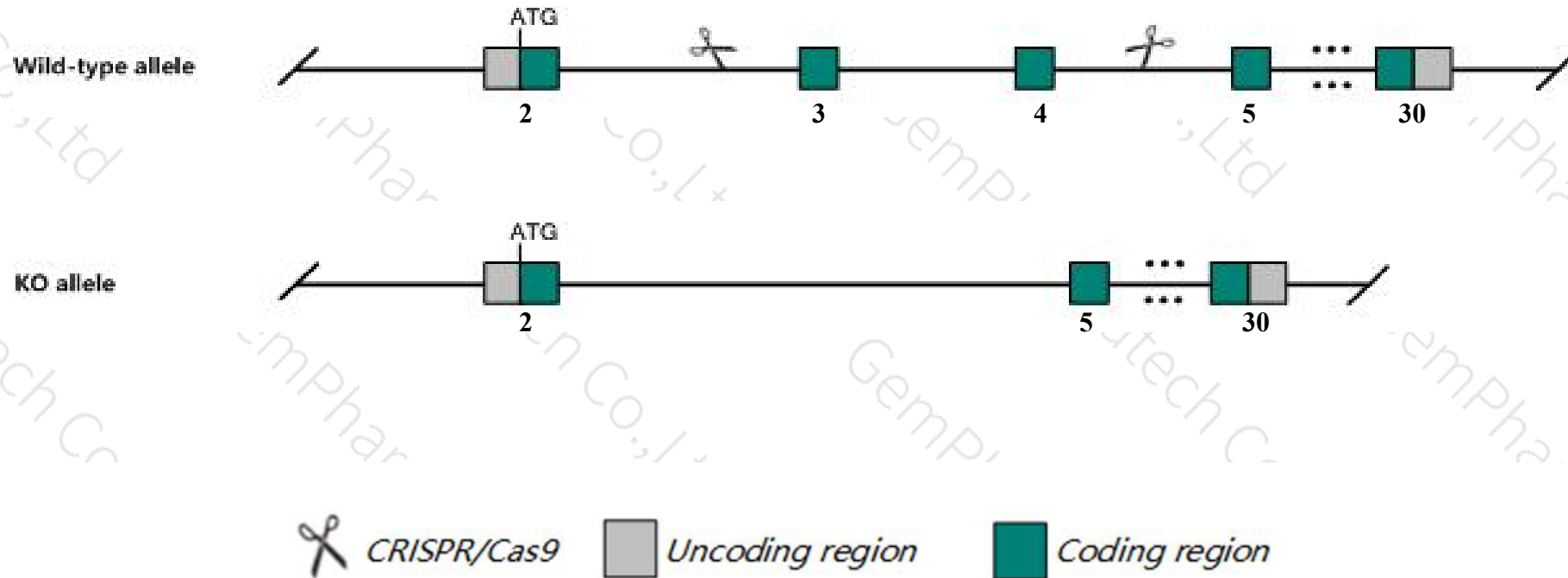
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nphp4* gene. The schematic diagram is as follows:



- The *Nphp4* gene has 6 transcripts. According to the structure of *Nphp4* gene, exon3-exon4 of *Nphp4-202* (ENSMUST00000081393.9) transcript is recommended as the knockout region. The region contains 326bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Nphp4* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mutant mice have a mottled retina with photoreceptor degeneration and male infertility associated with oligozoospermia and asthenozoospermia.
- The *Nphp4* gene is located on the Chr4. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Nphp4 nephronophthisis 4 (juvenile) homolog (human) [Mus musculus (house mouse)]

Gene ID: 260305, updated on 31-Jan-2019

Summary



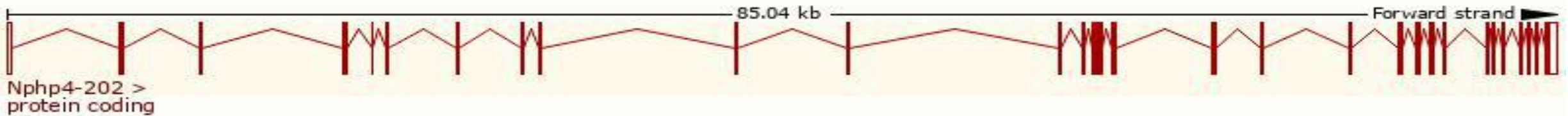
Official Symbol	Nphp4 provided by MGI
Official Full Name	nephronophthisis 4 (juvenile) homolog (human) provided by MGI
Primary source	MGI:MGI:2384210
See related	Ensembl:ENSMUSG00000039577
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4930564O18Rik, nmf192
Expression	Broad expression in testis adult (RPKM 3.8), cortex adult (RPKM 2.4) and 21 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nphp4-202	ENSMUST00000081393.9	5027	1425aa	Protein coding	CCDS38985	P59240	TSL:1 GENCODE basic APPRIS P1
Nphp4-201	ENSMUST00000056567.5	4583	1425aa	Protein coding	CCDS38985	P59240	TSL:1 GENCODE basic APPRIS P1
Nphp4-204	ENSMUST00000142027.7	4465	No protein	lncRNA	-	-	TSL:5
Nphp4-206	ENSMUST00000153759.7	1273	No protein	lncRNA	-	-	TSL:1
Nphp4-203	ENSMUST00000123635.1	644	No protein	lncRNA	-	-	TSL:3
Nphp4-205	ENSMUST00000146223.1	600	No protein	lncRNA	-	-	TSL:3

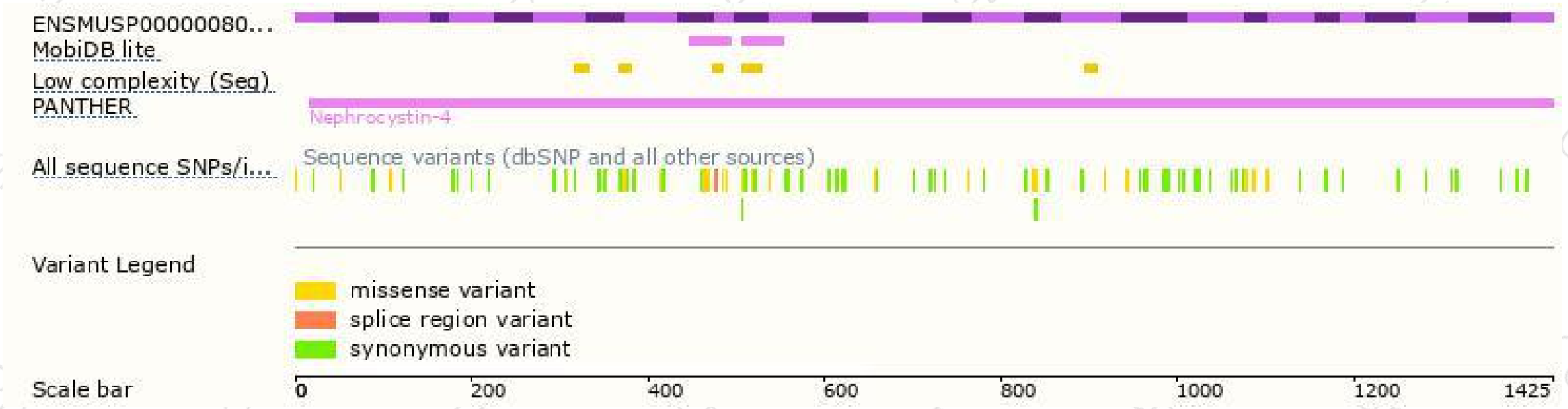
The strategy is based on the design of *Nphp4-202* transcript,The transcription is shown below



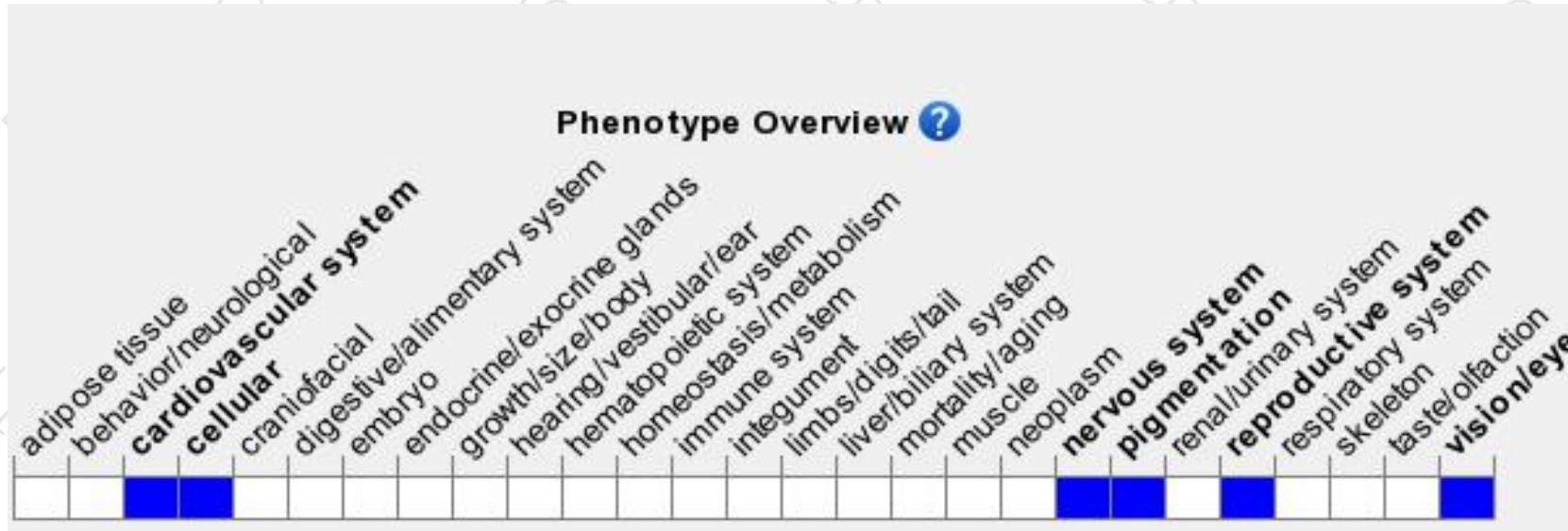
Genomic location distribution



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, Mutant mice have a mottled retina with photoreceptor degeneration and male infertility associated with oligozoospermia and asthenozoospermia.

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

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