

Nkd1 Cas9-KO Strategy

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Project Overview

Project Name

Nkd1

Project type

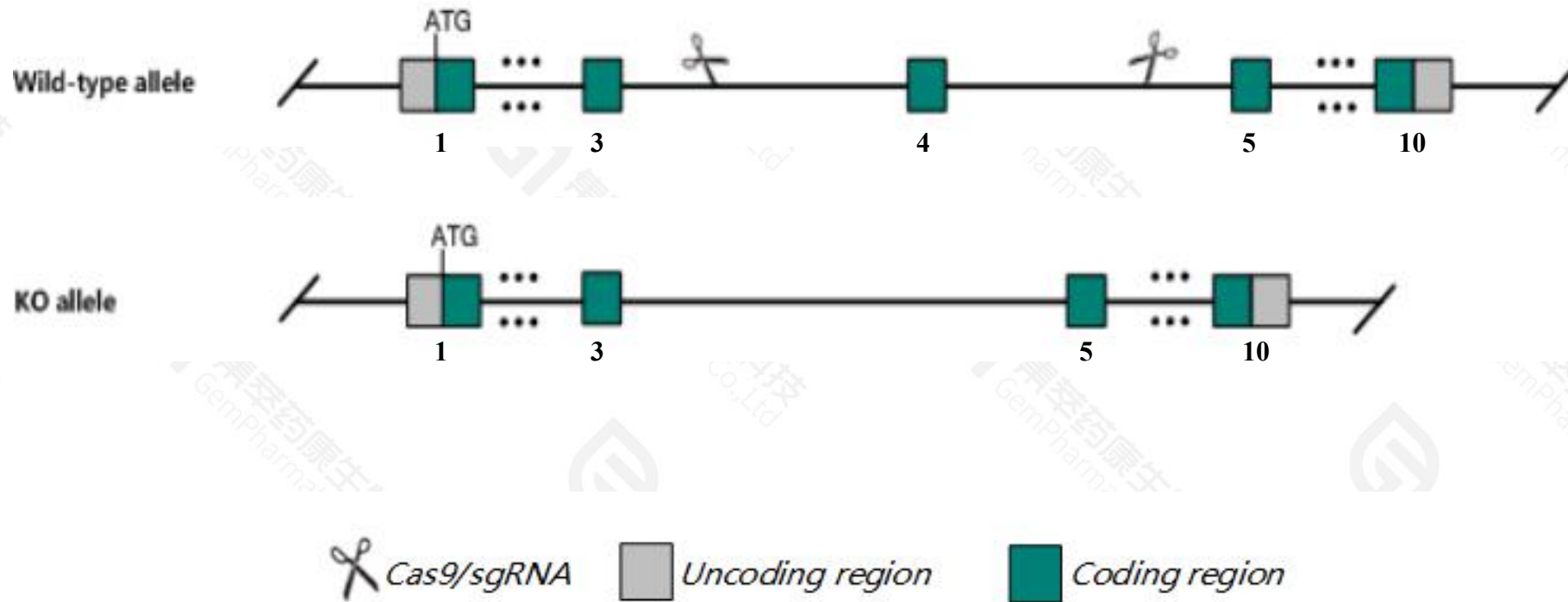
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nkd1* gene. The schematic diagram is as follows:



- The *Nkd1* gene has 3 transcripts. According to the structure of *Nkd1* gene, exon4 of *Nkd1-201*(ENSMUST00000034086.13) transcript is recommended as the knockout region. The region contains 67bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Nkd1* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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.

- According to the existing MGI data, homozygous null mice display reduced male fertility with oligozoospermia, small testis, and small seminiferous tubules.
- The *Nkd1* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Nkd1 naked cuticle 1 [Mus musculus (house mouse)]

Gene ID: 93960, updated on 17-Nov-2020

Summary



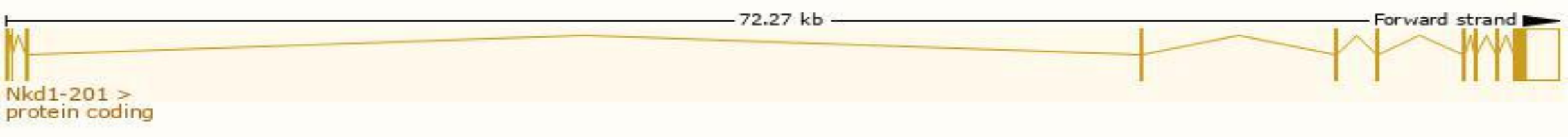
| | |
|---------------------------|---|
| Official Symbol | Nkd1 provided by MGI |
| Official Full Name | naked cuticle 1 provided by MGI |
| Primary source | MGI:MGI:2135954 |
| See related | Ensembl:ENSMUSG00000031661 |
| Gene type | protein coding |
| RefSeq status | VALIDATED |
| Organism | Mus musculus |
| Lineage | Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |
| Also known as | 2810434J10Rik, 9030215G15Rik, Nkd |
| Expression | Broad expression in lung adult (RPKM 30.7), bladder adult (RPKM 15.6) and 21 other tissues See more |
| Orthologs | human all |

Transcript information (Ensembl)

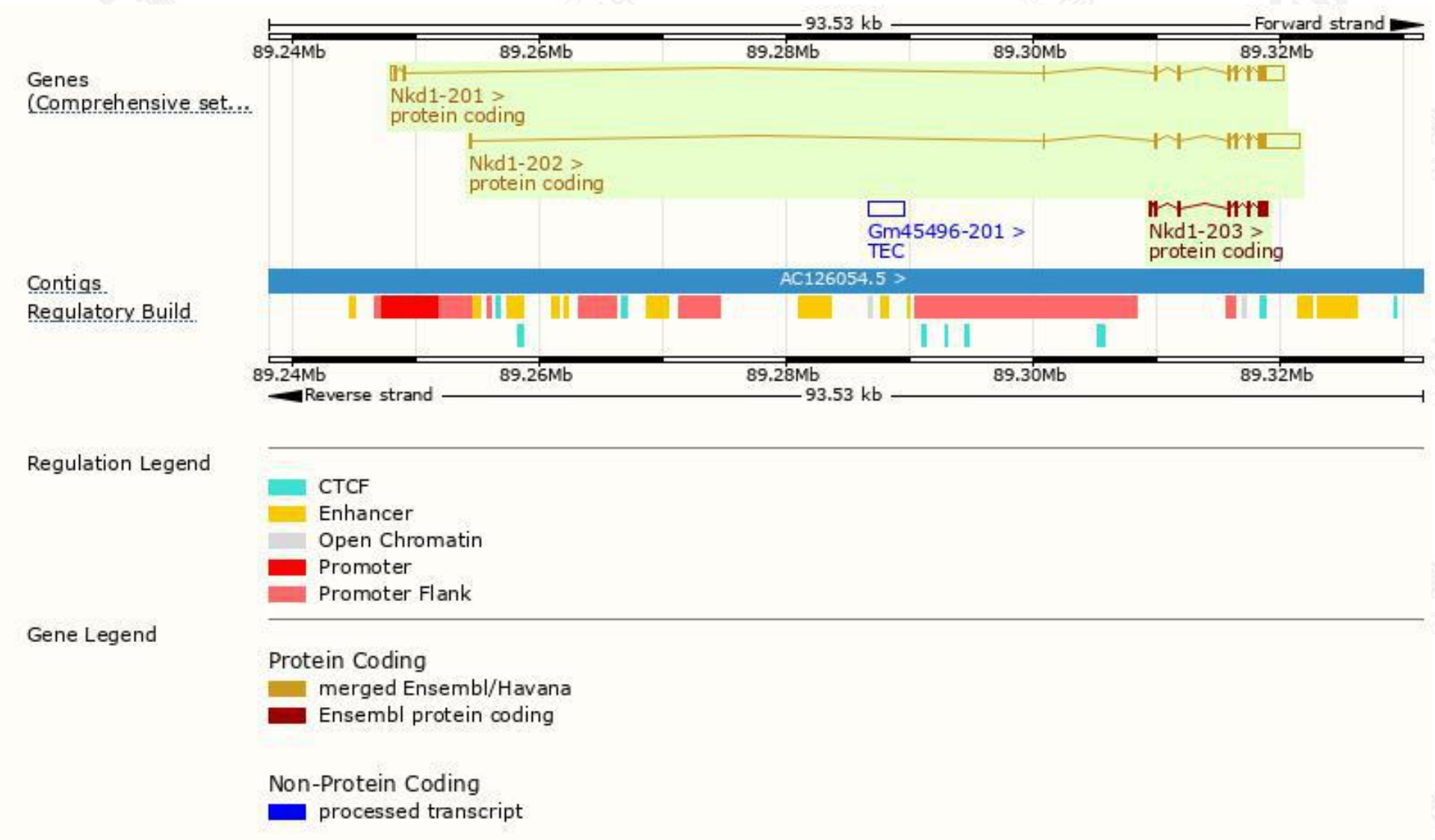
The gene has 3 transcripts,all transcripts are shown below:

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|----------|---------------------------------------|------|-----------------------|----------------|---------------------------|---------|-------------------------------------|
| Nkd1-202 | ENSMUST00000169179.3 | 4081 | 367aa | Protein coding | CCDS52631 | | TSL:2 , GENCODE basic , |
| Nkd1-201 | ENSMUST00000034086.13 | 3035 | 471aa | Protein coding | CCDS22511 | | TSL:1 , GENCODE basic , APPRIS P1 , |
| Nkd1-203 | ENSMUST00000211113.2 | 1474 | 367aa | Protein coding | CCDS52631 | | TSL:5 , GENCODE basic , |

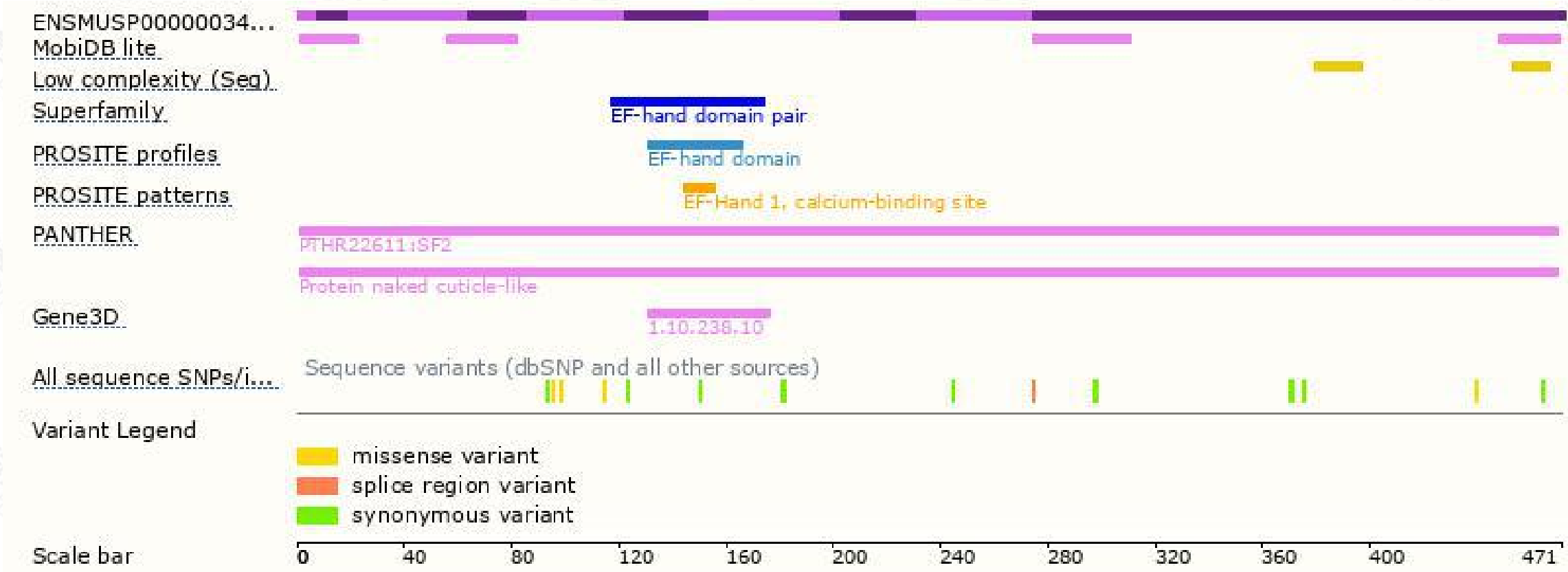
The strategy is based on the design of *Nkd1-201* transcript,the transcription is shown below:



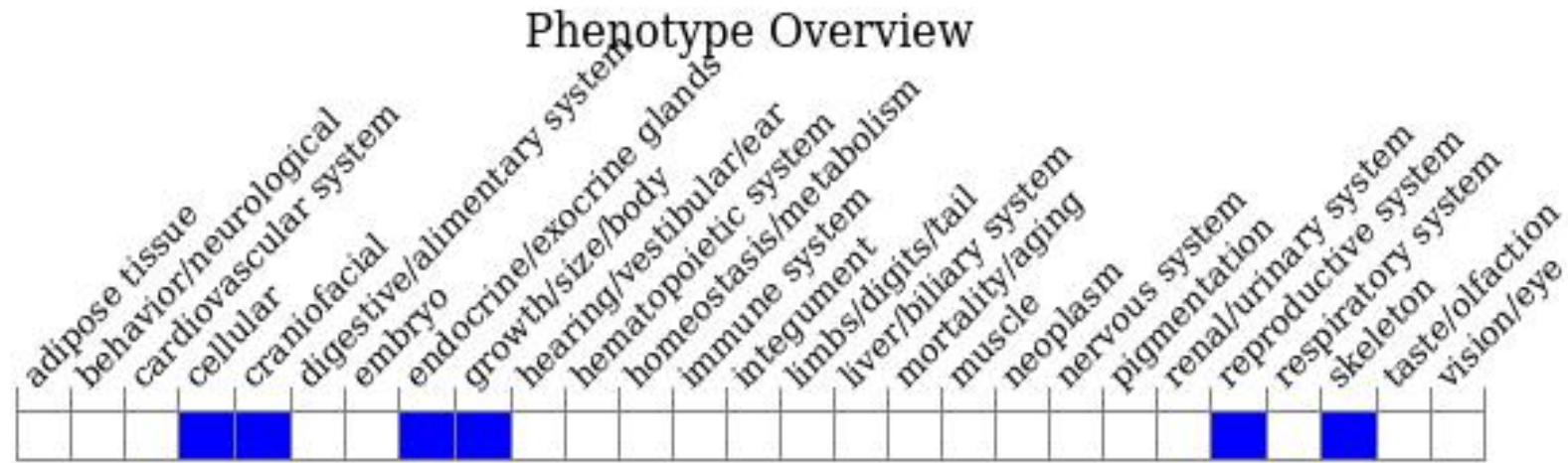
Genomic location distribution



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, homozygous null mice display reduced male fertility with oligozoospermia, small testis, and small seminiferous tubules.

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

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