Nkx3-1 Cas9-KO *Strategy*

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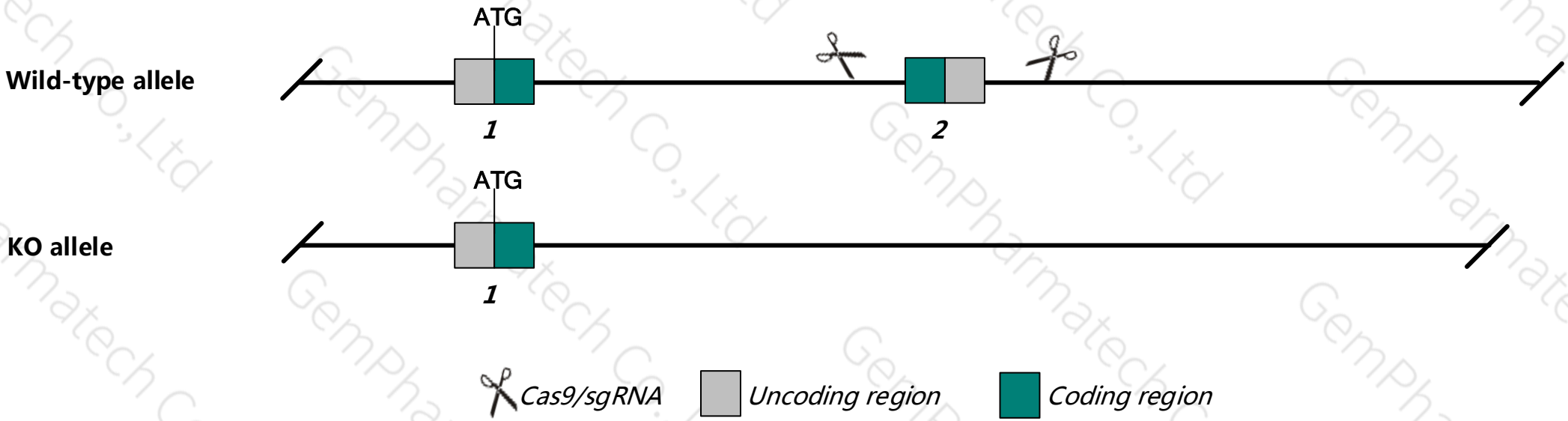
Project Overview

Project Name	***Nkx3-1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Nkx3-1* gene. The schematic diagram is as follows:



Technical routes

- The *Nkx3-1* gene has 1 transcript.According to the structure of *Nkx3-1* gene, exon2 of *Nkx3-1*-201 (ENSMUST00000022646.8) 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 *Nkx3-1* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9, 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.

Notice

- According to the existing MGI data，Homozygotes for targeted null mutations exhibit reduced minor salivary glands with altered duct morphology, altered prostate ductal morphogenesis, and prostate epithelial hyperplasia and neoplasia. Heterozygotes develop neoplastic foci.
- The *Nkx3-1* gene is located on the Chr14. 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）

Nkx3-1 NK3 homeobox 1 [*Mus musculus* (house mouse)]

Gene ID: 18095, updated on 12-Aug-2019

Summary

Official Symbol	Nkx3-1 provided by MGI
Official Full Name	NK3 homeobox 1 provided by MGI
Primary source	MGI:MGI:97352
See related	Ensembl:ENSMUSG00000022061
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Bax; NKX3A; NKX3.1; Nkx-3.1; bagpipe
Expression	Low expression observed in reference dataset See more
Orthologs	human all

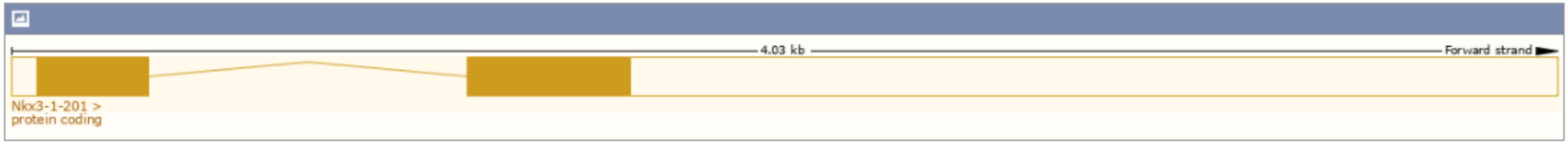
Transcript information（Ensembl）

The gene has 1 transcript, and the transcript is shown below:

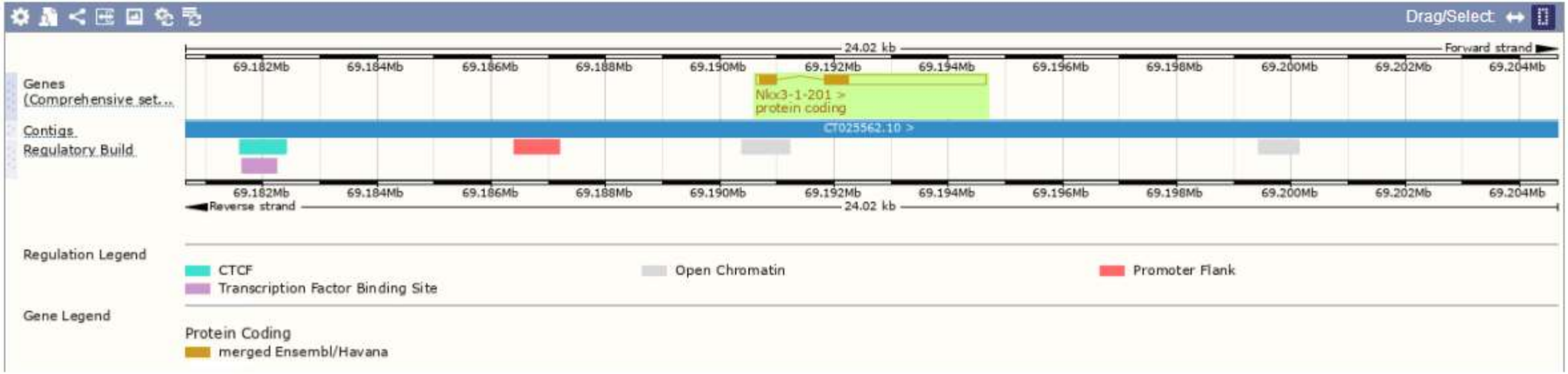
Show/hide columns (1 hidden) Filter

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	RefSeq	Flags
Nkx3-1-201	ENSMUST00000022646.8	3195	237aa	Protein coding	CCDS27237	P97436 Q3UVH8	NM_010921 NP_035051	TSL:1 GENCODE basic APPRIS P1

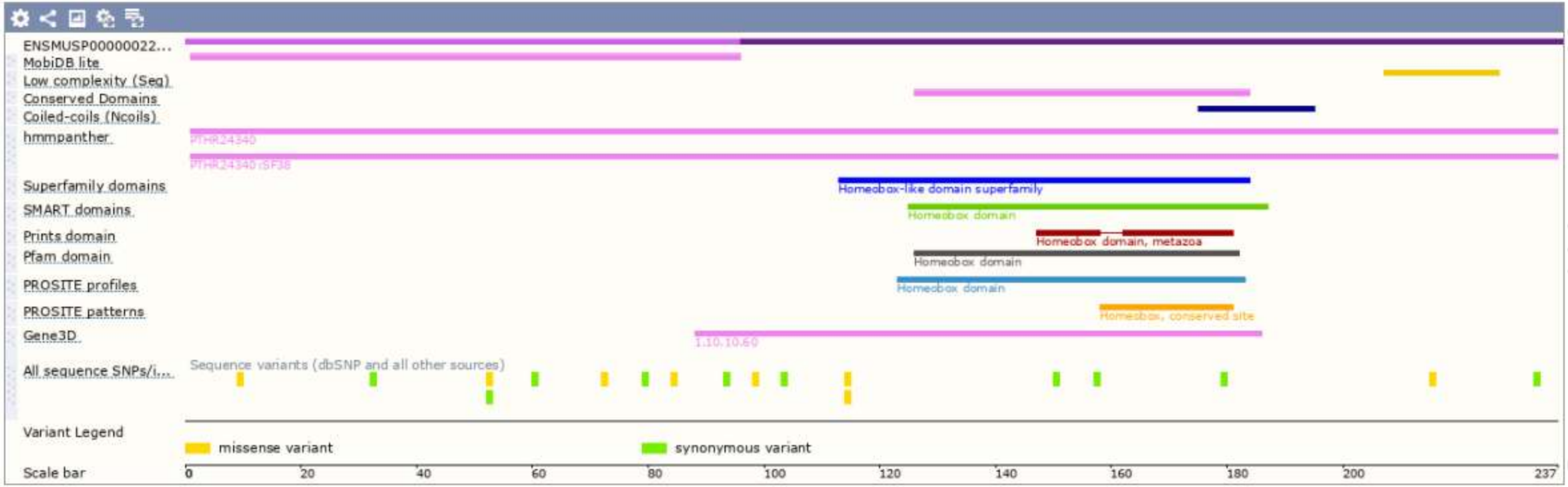
The strategy is based on the design of *Nkx3-1*-201 transcript,The transcription is shown below



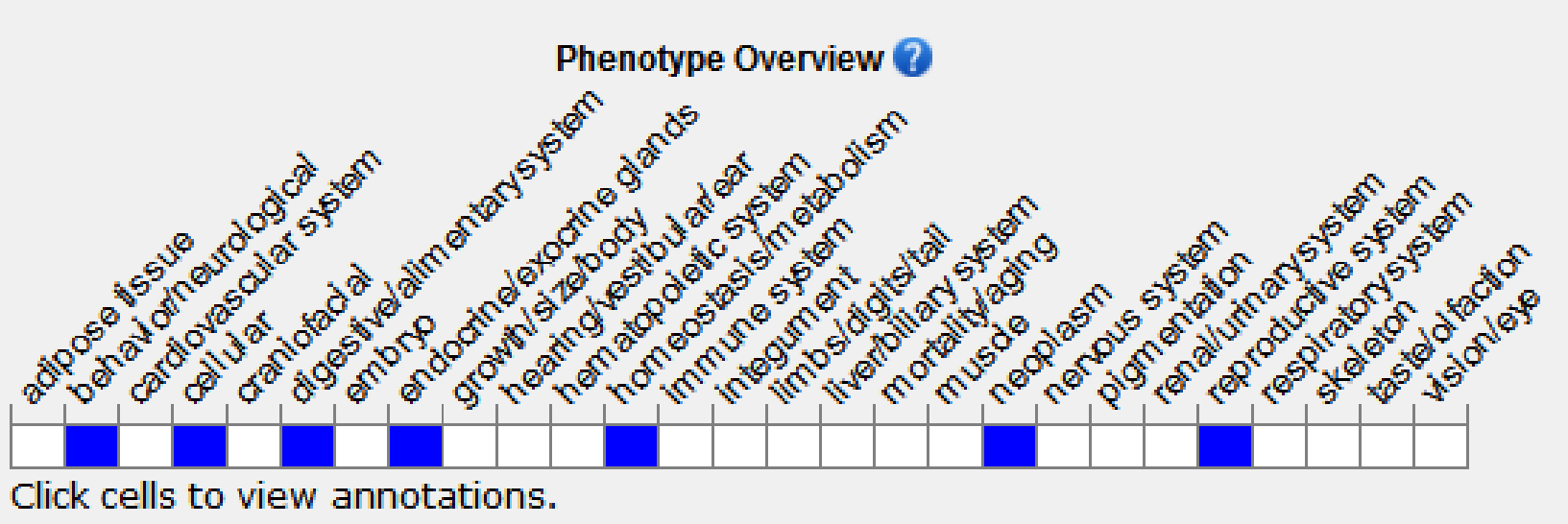
Genomic location distribution



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/) .

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

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