

***Ror1* Cas9-CKO Strategy**

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Project Overview

Project Name

Ror1

Project type

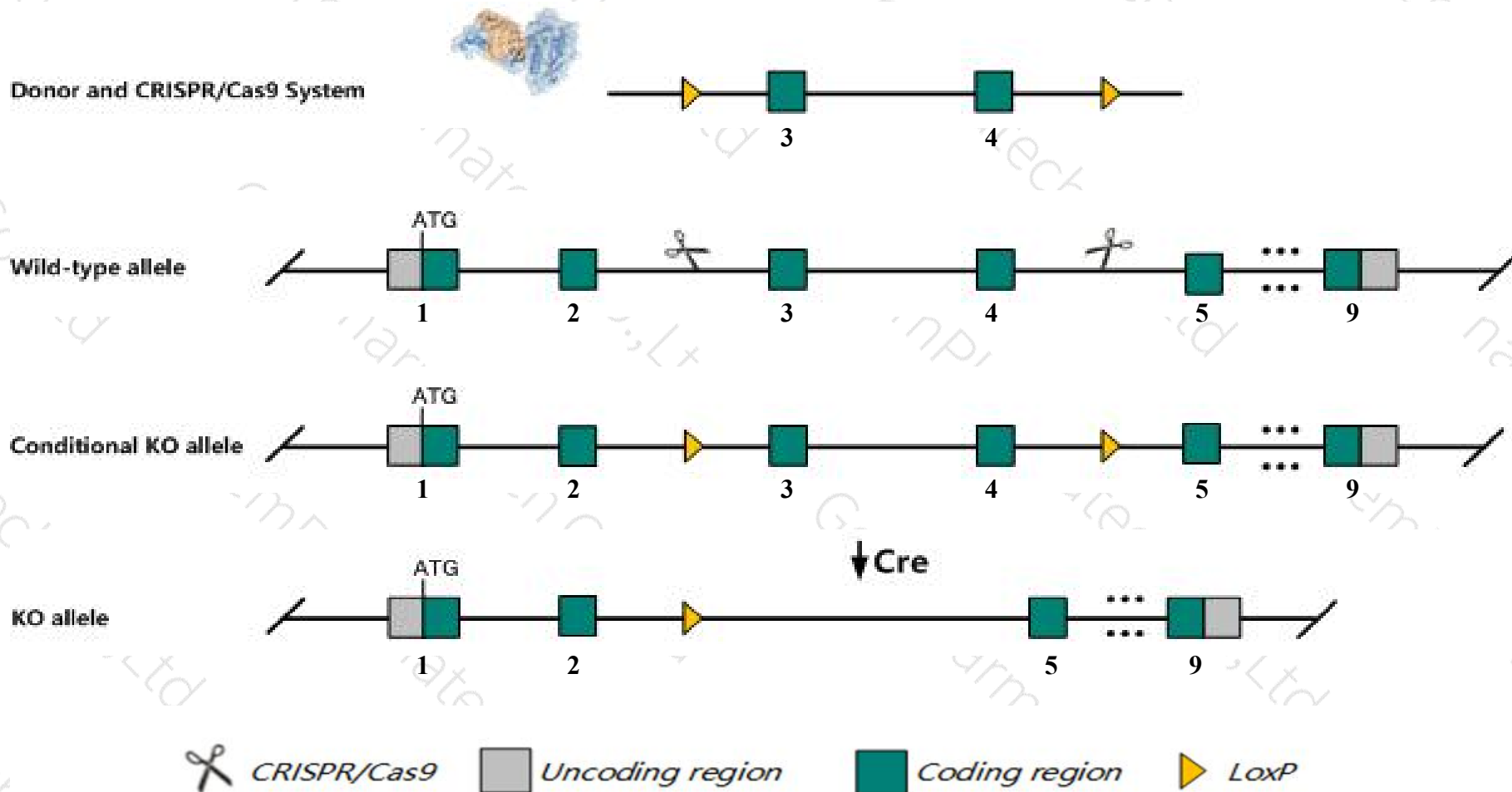
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ror1* gene. The schematic diagram is as follows:



Technical routes

- The *Ror1* gene has 1 transcript. According to the structure of *Ror1* gene, exon3-exon4 of *Ror1-201* (ENSMUST00000039630.5) transcript is recommended as the knockout region. The region contains 319bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ror1* 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, Mice homozygous for some disruptions in this gene die within the first day after birth from respiratory defects.
- The *Ror1* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Ror1 receptor tyrosine kinase-like orphan receptor 1 [Mus musculus (house mouse)]

Gene ID: 26563, updated on 26-Feb-2019

Summary



Official Symbol	Ror1 provided by MGI
Official Full Name	receptor tyrosine kinase-like orphan receptor 1 provided by MGI
Primary source	MGI:MGI:1347520
See related	Ensembl:ENSMUSG00000035305
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2810404D04Rik, Ntrkr1
Summary	This gene encodes a receptor tyrosine kinase that has been implicated in nervous system development, specifically in the maintenance of neural progenitor cell fate, neurite extension and synapse formation. The encoded protein, likely a pseudokinase that lacks catalytic activity, may also regulate adipogenesis. Alternative splicing results in multiple transcript variants. [provided by RefSeq, Aug 2015]
Expression	Broad expression in bladder adult (RPKM 2.2), limb E14.5 (RPKM 1.7) and 23 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

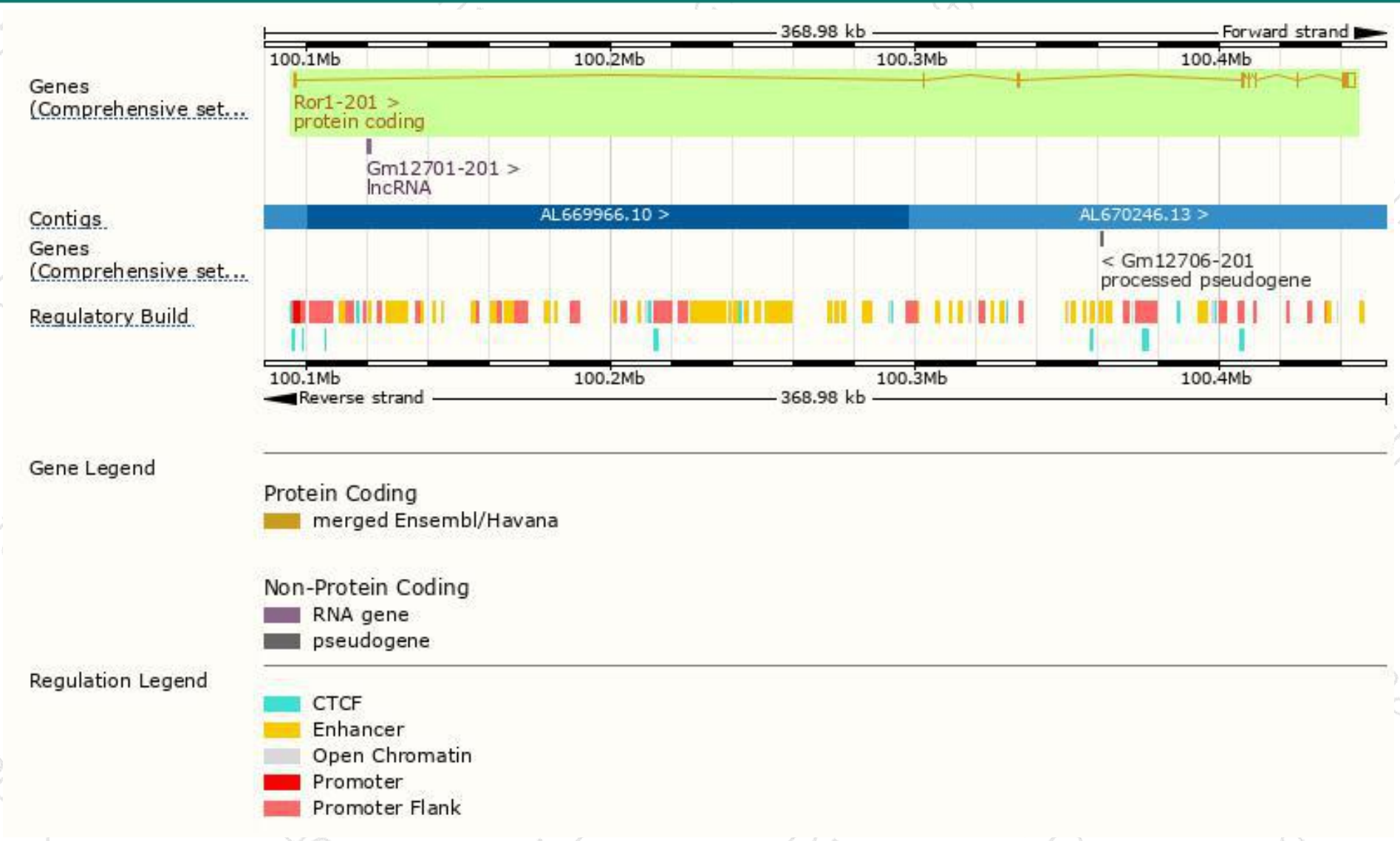
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ror1-201	ENSMUST00000039630.5	5762	937aa	Protein coding	CCDS18389	Q9Z139	TSL:1 GENCODE basic APPRIS P1

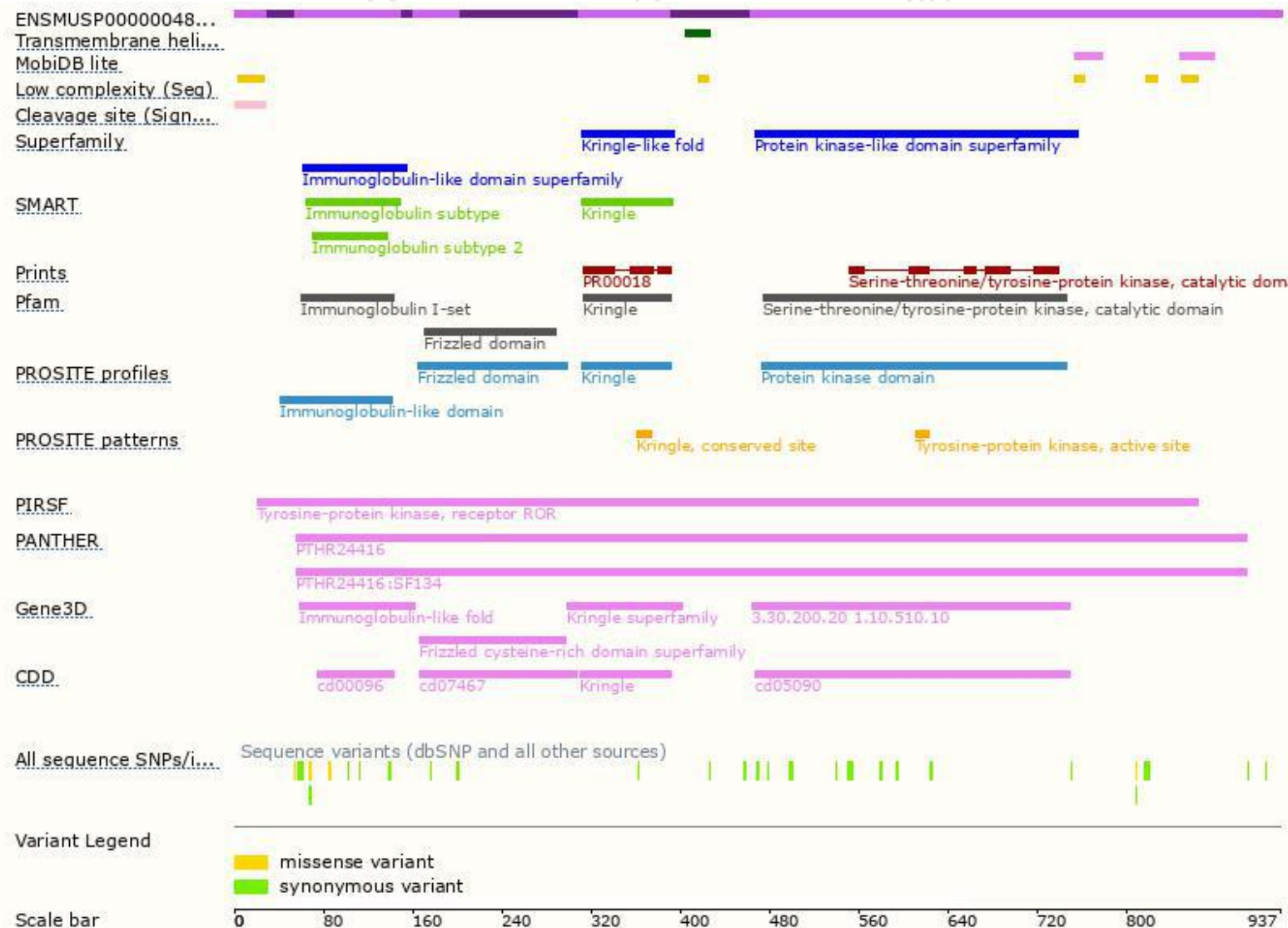
The strategy is based on the design of *Ror1-201* transcript, The transcription is shown below



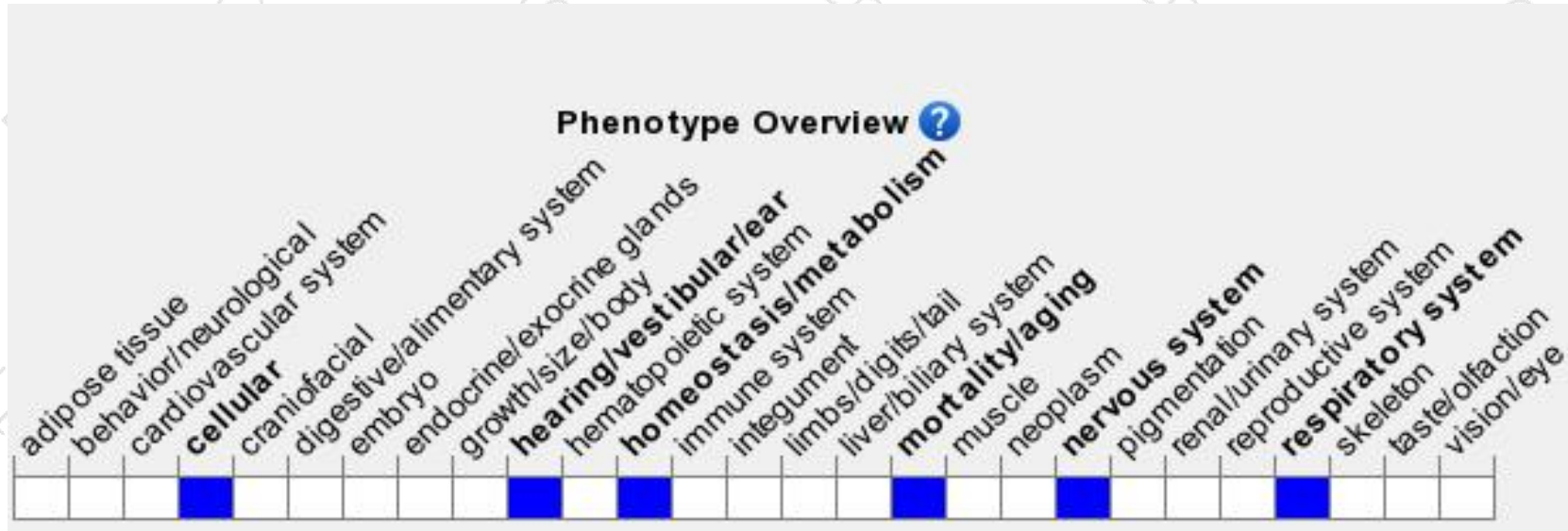
Genomic location distribution



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, Mice homozygous for some disruptions in this gene die within the first day after birth from respiratory defects.

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

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