Ntrk1 Cas9-KO Strategy

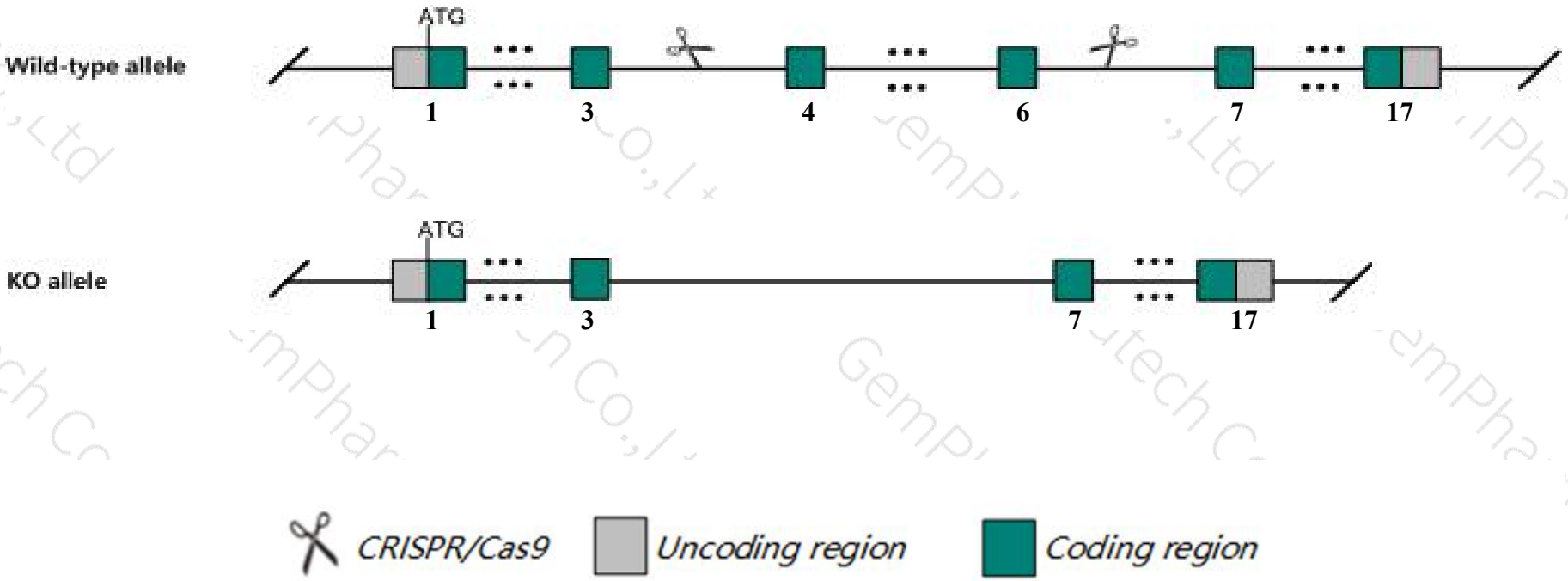
Designer: Qiong Zhou

Project Overview

Project Name	***Ntrk1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ntrk1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Ntrk1* gene has 1 transcript. According to the structure of *Ntrk1* gene, exon4-exon6 of *Ntrk1-201* (ENSMUST00000029712.4) transcript is recommended as the knockout region.The region contains 364bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Ntrk1* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Homozygous null mutations result in premature death due to severe sensory and sympathetic neuropathies. A conditional mutant mouse exhibits defects in mast cell and B cell physiology. Homozygotes for a point mutation are normal, but are subject to pharmacological control of signalling.

- The *Ntrk1* gene is located on the Chr3. 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）

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Ntrk1 neurotrophic tyrosine kinase, receptor, type 1 [*Mus musculus* (house mouse)]

Gene ID: 18211, updated on 10-Oct-2019

Summary

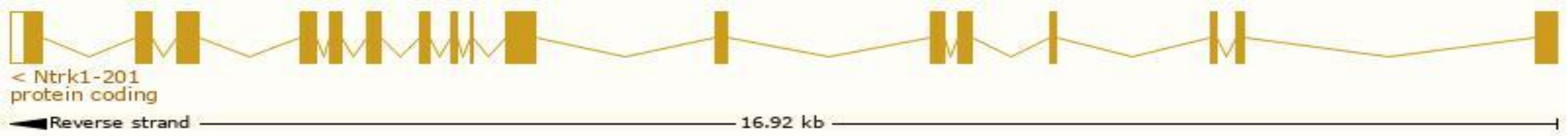
Official Symbol	Ntrk1 provided by MGI
Official Full Name	neurotrophic tyrosine kinase, receptor, type 1 provided by MGI
Primary source	MGI:MGI:97383
See related	Ensembl:ENSMUSG00000028072
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Tkr; trk; TrkA; C80751
Expression	Biased expression in adrenal adult (RPKM 7.1), CNS E14 (RPKM 2.8) and 13 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

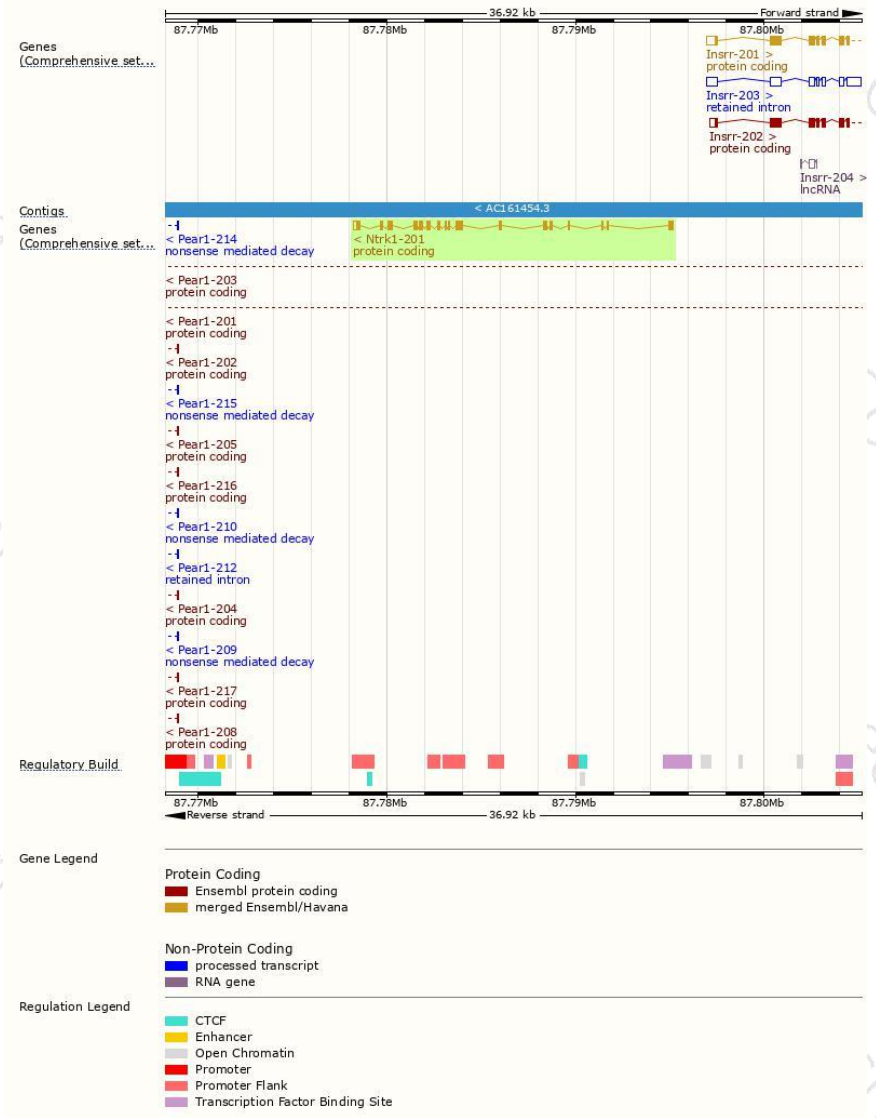
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ntrk1-201	ENSMUST00000029712.4	2588	799aa	Protein coding	CCDS50947	Q3UFB7	TSL:1 GENCODE basic APPRIS P1

The strategy is based on the design of *Ntrk1-201* transcript,The transcription is shown below

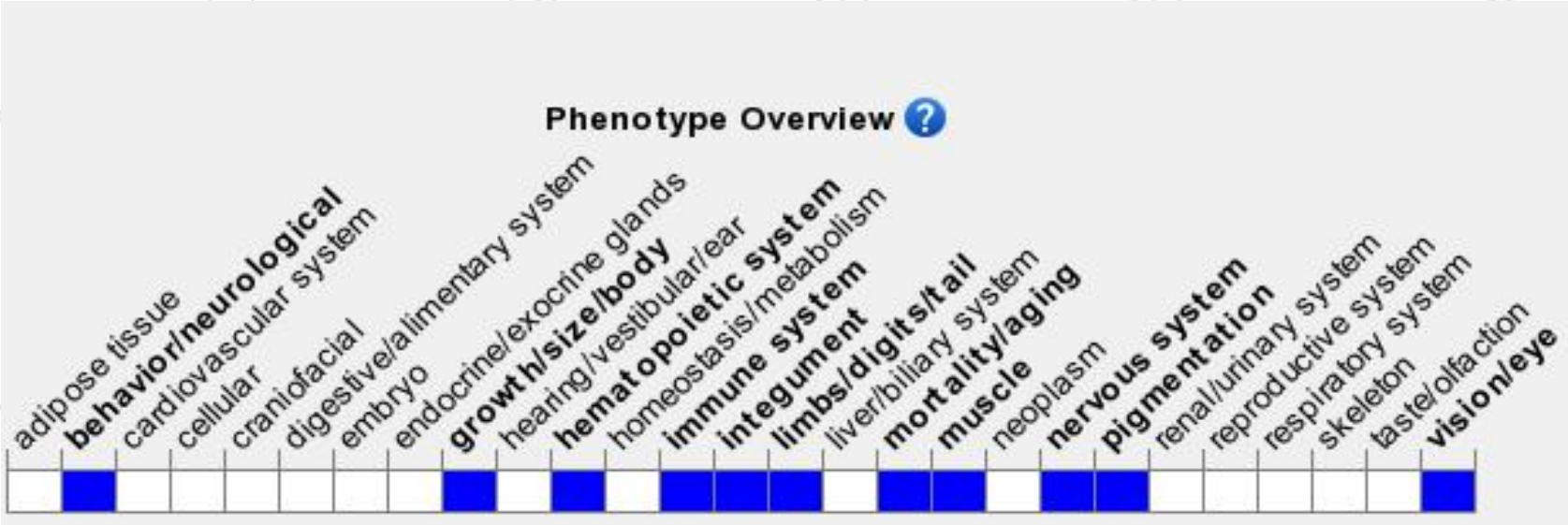


Genomic location distribution



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 mutations result in premature death due to severe sensory and sympathetic neuropathies. A conditional mutant mouse exhibits defects in mast cell and B cell physiology. Homozygotes for a point mutation are normal, but are subject to pharmacological control of signalling.

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

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