

Ntrk2 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Ntrk2

Project type

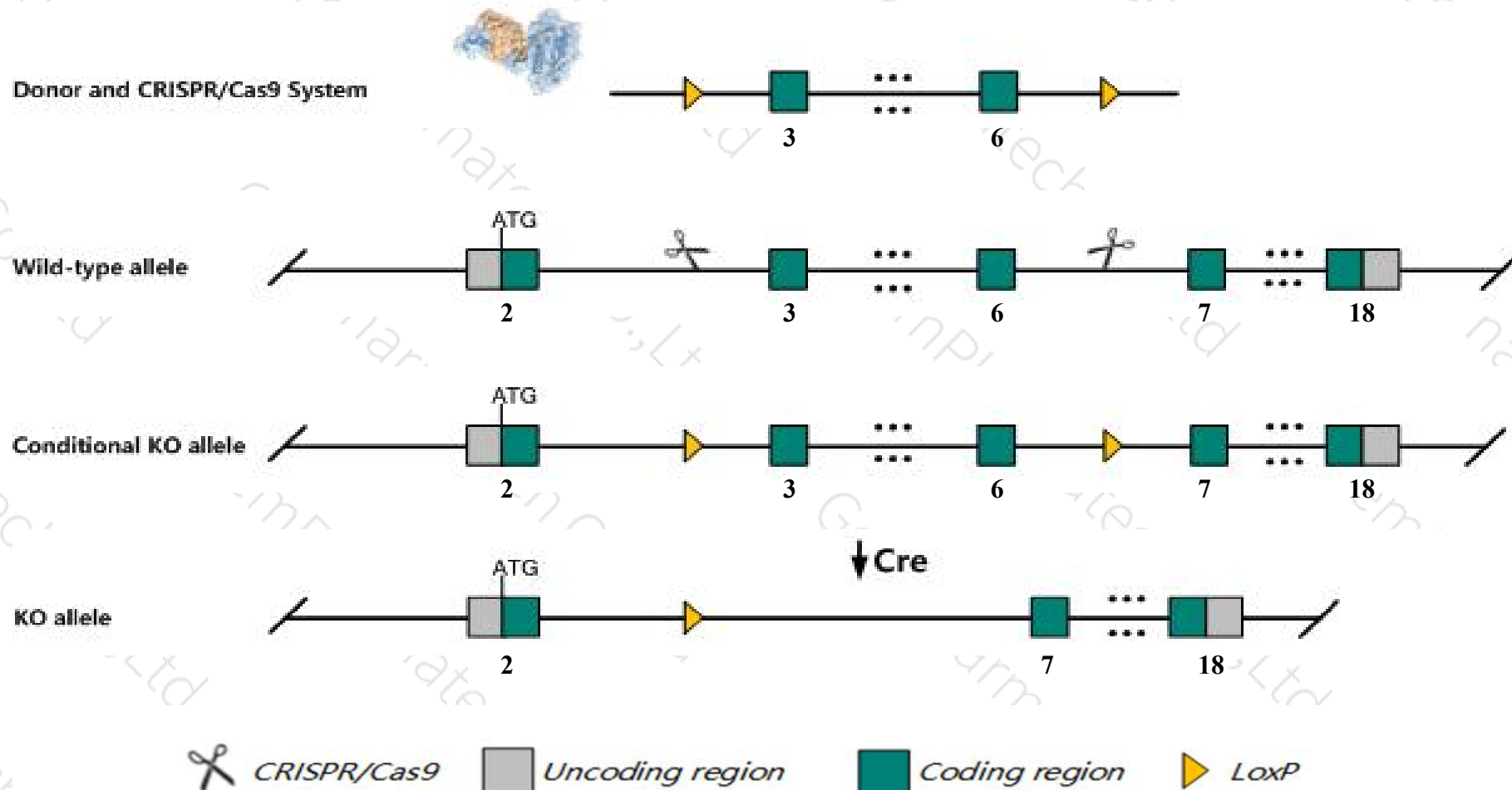
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ntrk2* gene. The schematic diagram is as follows:



Technical routes

- The *Ntrk2* gene has 10 transcripts. According to the structure of *Ntrk2* gene, exon3-exon6 of *Ntrk2-201* (ENSMUST00000079828.6) transcript is recommended as the knockout region. The region contains 371bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ntrk2* 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, Different lines of homozygous mice show varied abnormalities including innervation and neural defects, rod defects, impaired ovarian folliculogenesis, and reduced postnatal survival. Homozygotes for a point mutation are normal, but are subject to pharmacological control of signalling.
- The *Ntrk2* gene is located on the Chr13. 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)

Ntrk2 neurotrophic tyrosine kinase, receptor, type 2 [Mus musculus (house mouse)]

Gene ID: 18212, updated on 19-Mar-2019

Summary



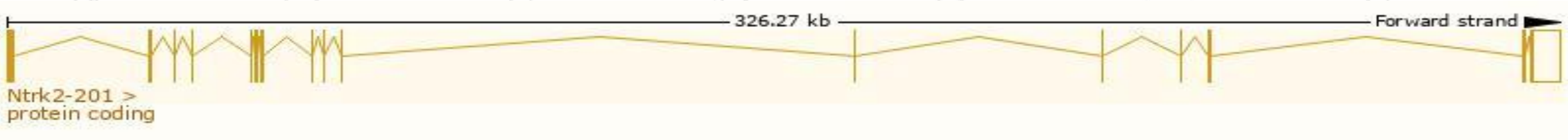
Official Symbol	Ntrk2 provided by MGI
Official Full Name	neurotrophic tyrosine kinase, receptor, type 2 provided by MGI
Primary source	MGI:MGI:97384
See related	Ensembl:ENSMUSG00000055254
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	GP145-TrkB/GP95-TrkB, Tkrb, trk-B, trkB
Expression	Biased expression in frontal lobe adult (RPKM 10.3), cortex adult (RPKM 10.2) and 12 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

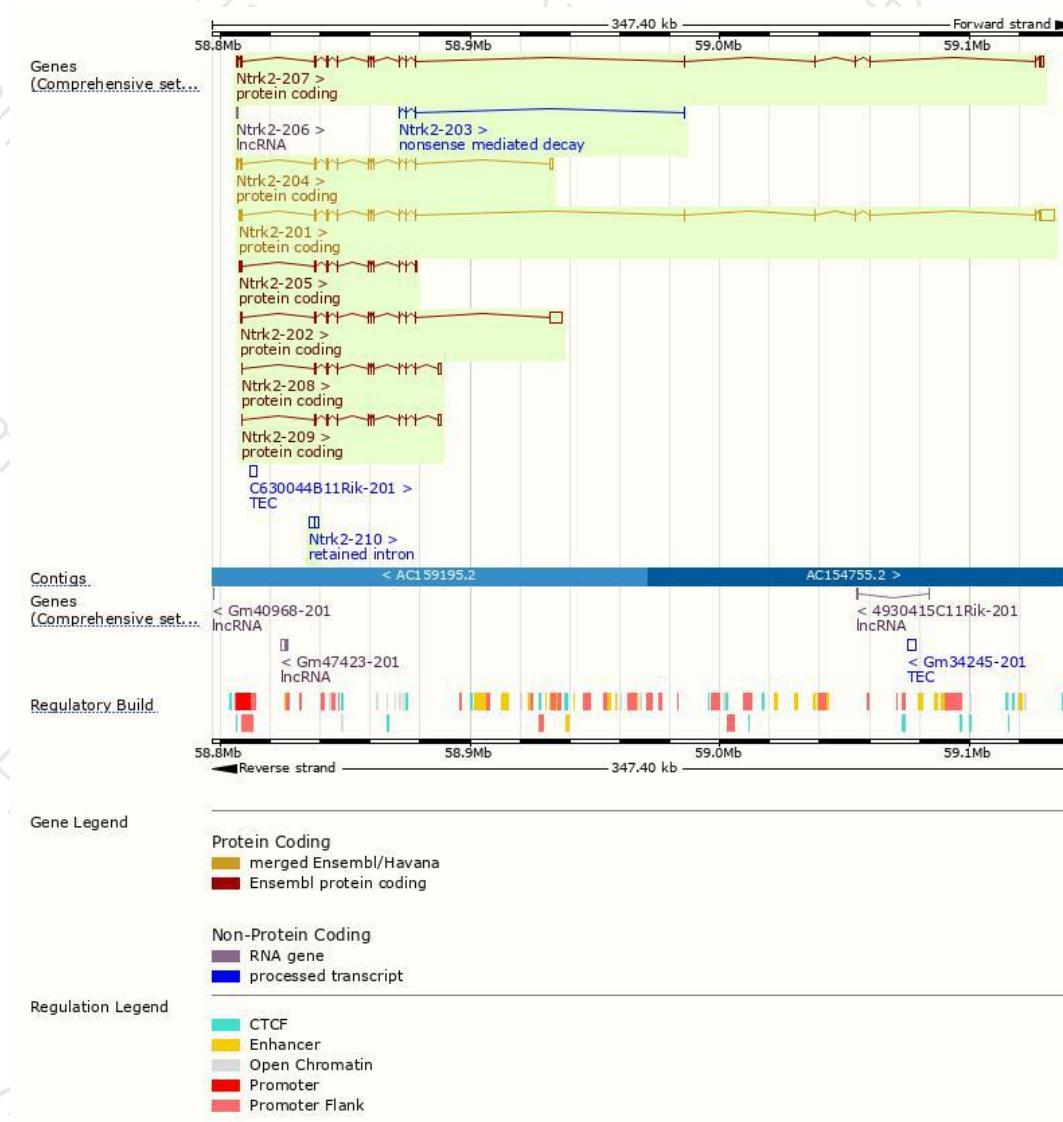
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ntrk2-201	ENSMUST00000079828.6	8744	821aa	Protein coding	CCDS26573	P15209	TSL:1 GENCODE basic APPRIS P1
Ntrk2-202	ENSMUST00000109838.9	6846	476aa	Protein coding	CCDS36685	P15209 Q3UHE3	TSL:1 GENCODE basic
Ntrk2-207	ENSMUST00000225488.1	4706	821aa	Protein coding	CCDS26573	P15209	GENCODE basic APPRIS P1
Ntrk2-204	ENSMUST00000224259.1	3049	476aa	Protein coding	CCDS36685	P15209 Q3UHE3	GENCODE basic
Ntrk2-208	ENSMUST00000225583.1	2719	466aa	Protein coding	-	A0A286YDA0	GENCODE basic
Ntrk2-209	ENSMUST00000225950.1	2640	489aa	Protein coding	-	A0A286YCV8	GENCODE basic
Ntrk2-205	ENSMUST00000224402.1	2284	492aa	Protein coding	-	A0A286YDA3	GENCODE basic
Ntrk2-203	ENSMUST00000223636.1	583	51aa	Nonsense mediated decay	-	A0A286YCB7	CDS 5' incomplete
Ntrk2-210	ENSMUST00000226021.1	3350	No protein	Retained intron	-	-	
Ntrk2-206	ENSMUST00000225119.1	356	No protein	lncRNA	-	-	

The strategy is based on the design of *Ntrk2-201* transcript,The transcription is shown below



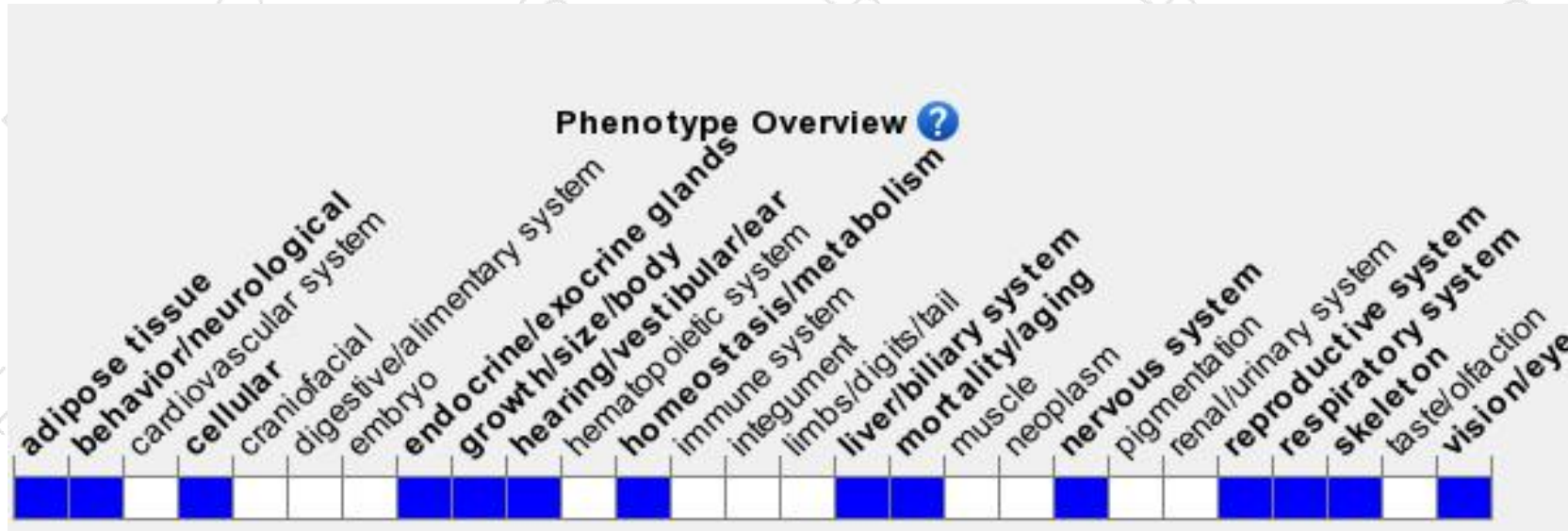
Genomic location distribution



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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