Nrtn Cas9-KO Strategy

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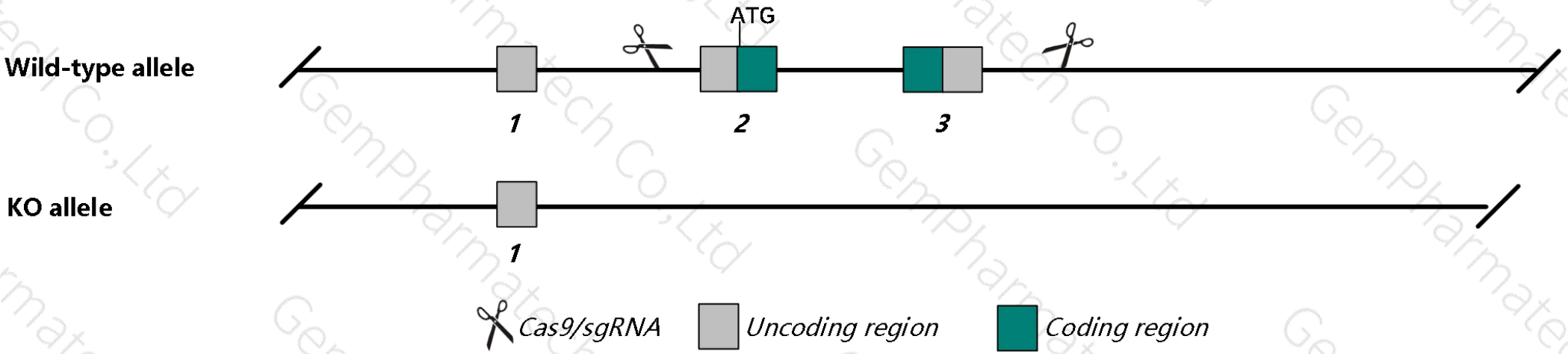
Project Overview

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

Knockout strategy

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



Technical routes

- The *Nrtn* gene has 1 transcript. According to the structure of *Nrtn* gene, exon2-exon3 of *Nrtn-201* (ENSMUST00000044752.5) transcript is recommended as the knockout region.The region contains all of coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Nrtn* gene. The brief process is as follows: gRNA was transcribed in vitro.Cas9 and gRNA 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, Mice homozygous for disruptions of this gene have drooping, thickened eyelids which are a manifestation of abnormalities in the parasympathetic system.

➢ The *Nrtn* gene is located on the Chr17. 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）

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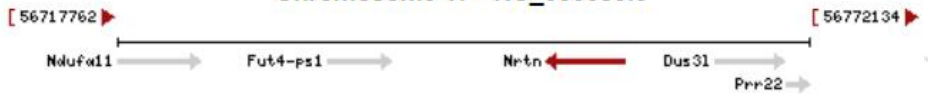
Nrtn neurturin [*Mus musculus* (house mouse)]

Gene ID: 18188, updated on 12-Aug-2019

Summary

Official Symbol	Nrtn provided by MGI
Official Full Name	neurturin provided by MGI
Primary source	MGI:MGI:108417
See related	Ensembl:ENSMUSG00000039481
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	NTN
Summary	This gene encodes a secreted ligand of the TGF-beta (transforming growth factor-beta) superfamily of proteins. The encoded preproprotein is proteolytically processed to generate the mature protein. This protein signals through the RET receptor tyrosine kinase and a GPI-linked coreceptor, and promotes survival of neuronal populations. Homozygous knockout mice for this gene exhibit defects in the development of the retina and enteric nervous system, and reduced cholinergic innervation of the heart and lacrimal glands. [provided by RefSeq, Aug 2016]
Expression	Broad expression in ovary adult (RPKM 87.5), stomach adult (RPKM 66.3) and 15 other tissues See more
Orthologs	human all

Chromosome 17 - NC_000083.6

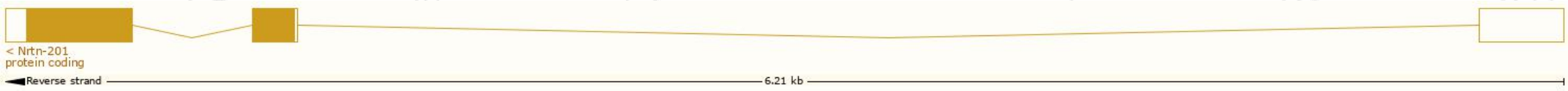


Transcript information（Ensembl）

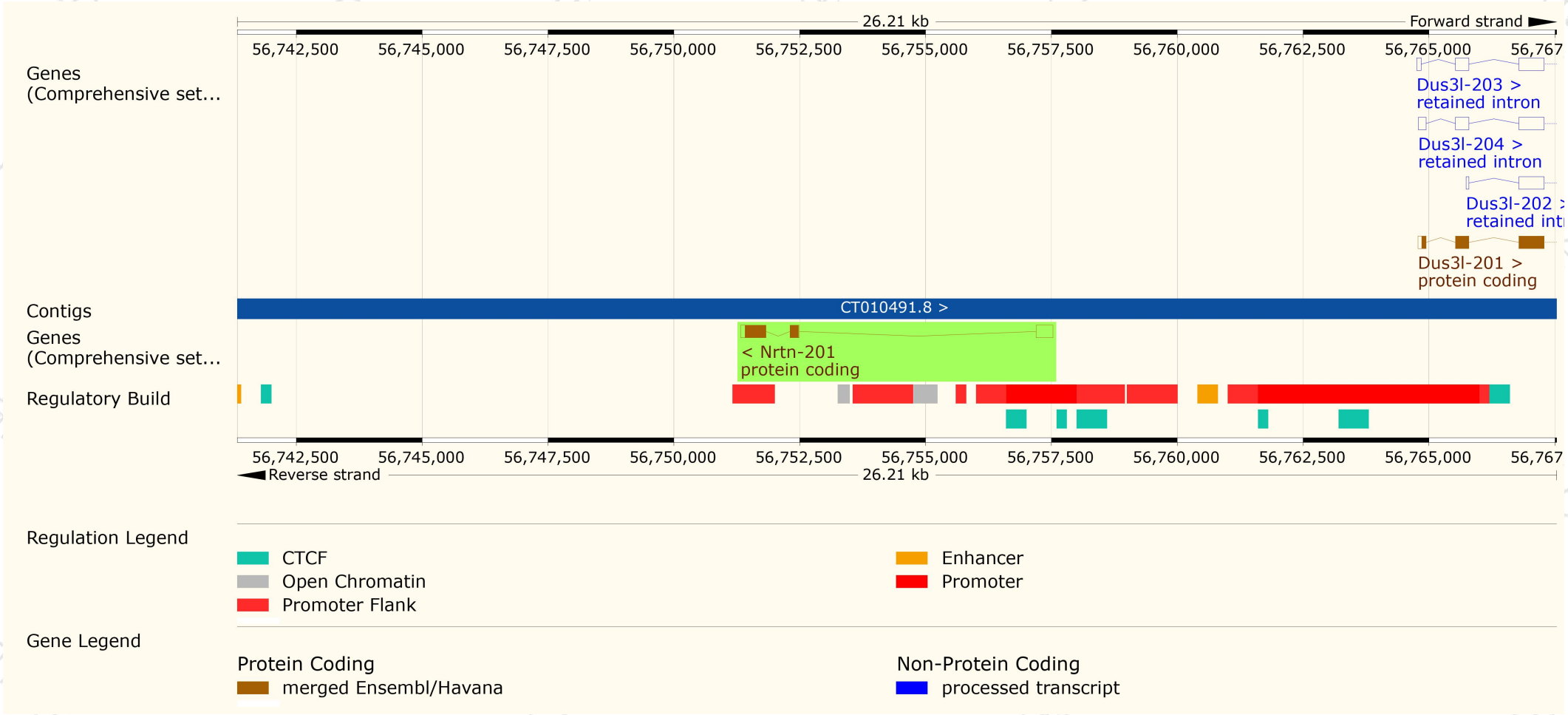
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Nrtn-201	ENSMUST00000044752.5	1023	195aa	ENSMUSP00000046512.5	Protein coding	CCDS28913	P97463	TSL:1 GENCODE basic APPRIS P1

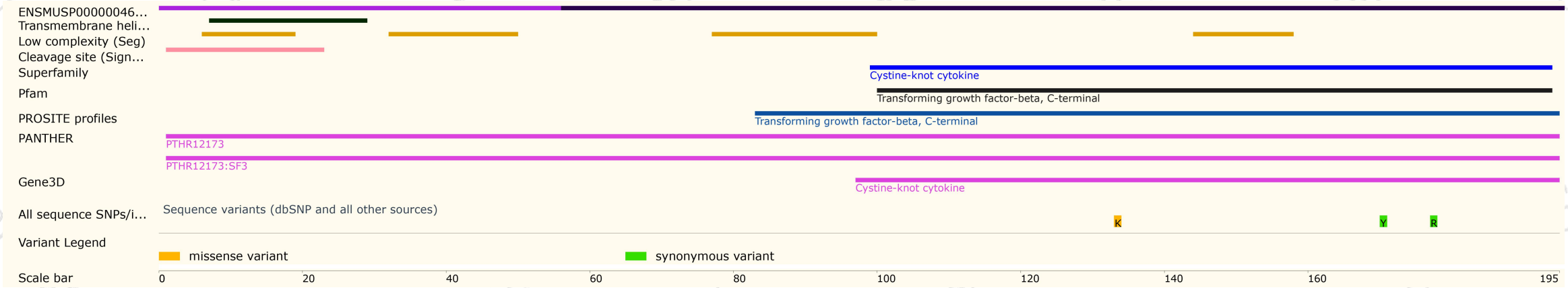
The strategy is based on the design of *Nrtn-201* transcript,The transcription is shown below



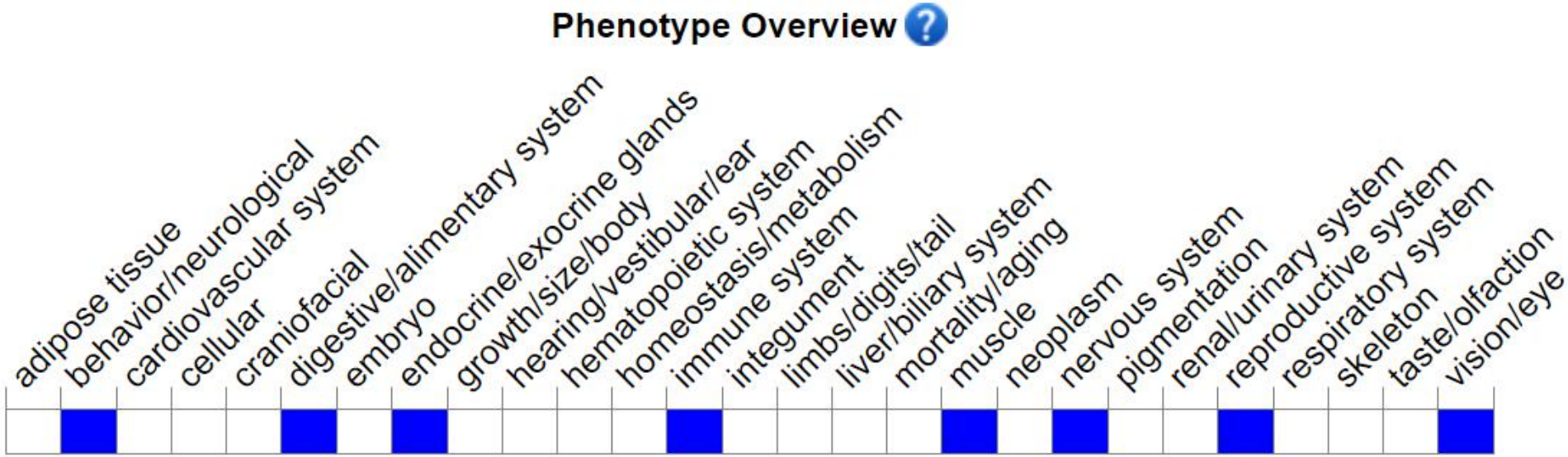
Genomic location distribution



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 disruptions of this gene have drooping, thickened eyelids which are a manifestation of abnormalities in the parasympathetic system.

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

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