

# *Ntf3* Cas9-CKO Strategy

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# Project Overview

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**Project Name**

*Ntf3*

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**Project type**

**Cas9-CKO**

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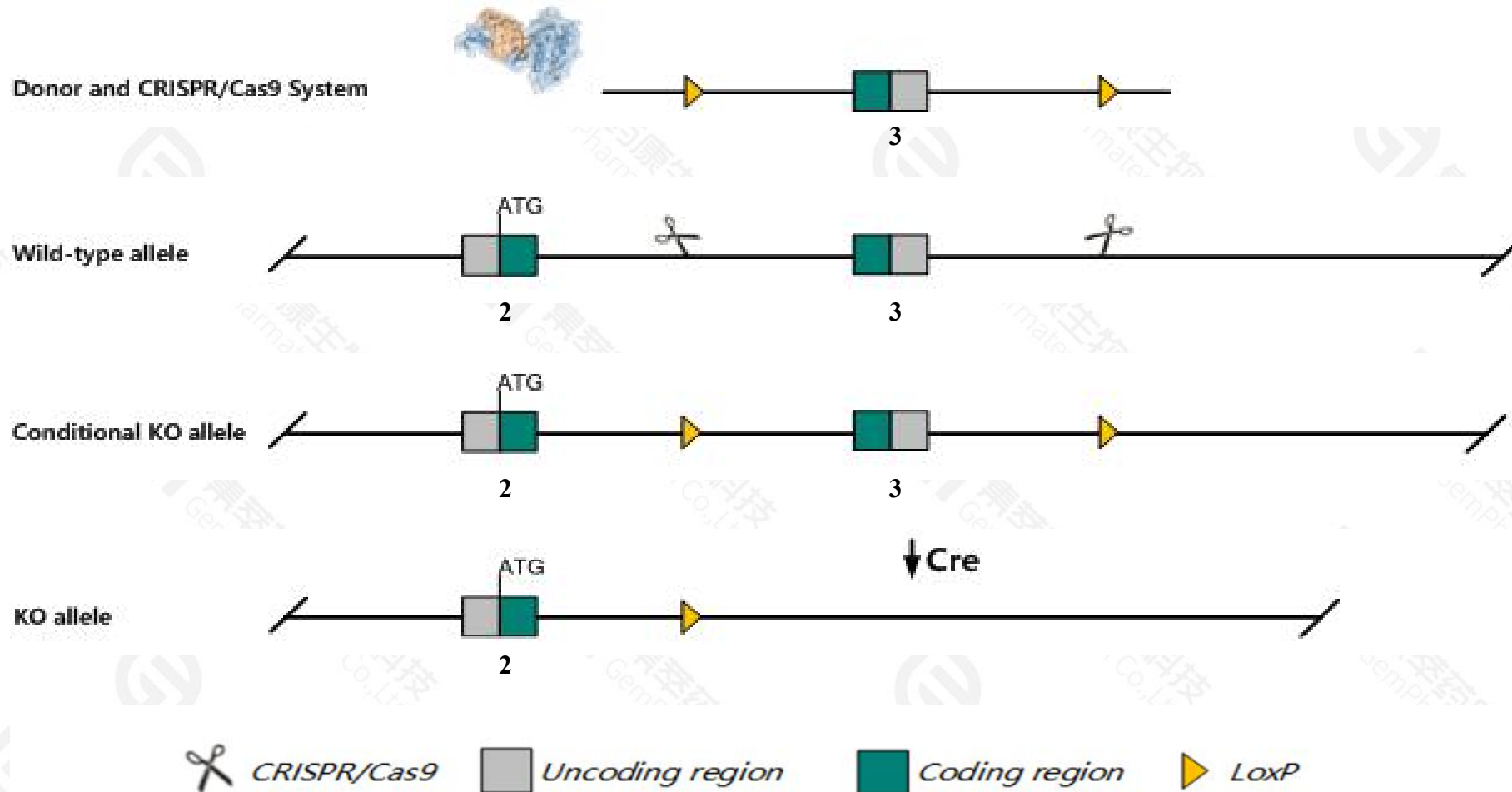
**Strain background**

**C57BL/6JGpt**

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# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ntf3* gene. The schematic diagram is as follows:



- The *Ntf3* gene has 3 transcripts. According to the structure of *Ntf3* gene, exon3 of *Ntf3*-202(ENSMUST00000112244.8) 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 *Ntf3* 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, homozygotes for targeted null mutations exhibit loss of peripheral sensory and sympathetic neurons, lack of spinal proprioceptive afferents and their sense organs, impaired suckling and movement, and postnatal lethality. Heterozygotes show mild defects.
- The *Ntf3* gene is located on the Chr6. 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)

## Ntf3 neurotrophin 3 [Mus musculus (house mouse)]

Gene ID: 18205, updated on 17-Dec-2020

### Summary



**Official Symbol** Ntf3 provided by [MGI](#)

**Official Full Name** neurotrophin 3 provided by [MGI](#)

**Primary source** [MGI:MGI:97380](#)

**See related** [Ensembl:ENSMUSG00000049107](#)

**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** AI316846, AI835689, HDNF, NGF-2, NT, NT-, Nt3, Ntf-, Ntf-3

**Summary** This gene encodes a member of the neurotrophins that have a wide variety of functions in both neural and non-neural tissues. The encoded preproprotein undergoes proteolytic processing to generate a noncovalently linked homodimeric mature protein that can bind to the transmembrane receptor tyrosine kinases to initiate a series of signaling events. Mice lacking the encoded protein exhibit severe defects in the peripheral nervous system including a complete lack of spinal proprioceptive afferents and their peripheral sense organs. [provided by RefSeq, Sep 2016]

**Expression** Broad expression in bladder adult (RPKM 4.6), limb E14.5 (RPKM 4.0) and 21 other tissues [See more](#)

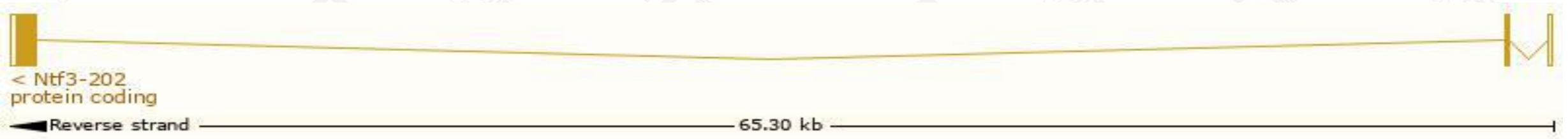
**Orthologs** [human](#) [all](#)

# Transcript information (Ensembl)

The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ntf3-201	<a href="#">ENSMUST00000050484.9</a>	1483	<a href="#">258aa</a>	Protein coding	<a href="#">CCDS20553</a>		TSL:2 , GENCODE basic , APPRIS P3 ,
Ntf3-202	<a href="#">ENSMUST00000112244.8</a>	1399	<a href="#">271aa</a>	Protein coding	<a href="#">CCDS51914</a>		TSL:3 , GENCODE basic , APPRIS ALT1 ,
Ntf3-203	<a href="#">ENSMUST00000204542.3</a>	1343	<a href="#">271aa</a>	Protein coding	<a href="#">CCDS51914</a>		TSL:1 , GENCODE basic , APPRIS ALT1 ,

The strategy is based on the design of *Ntf3-202* transcript,the transcription is shown below:



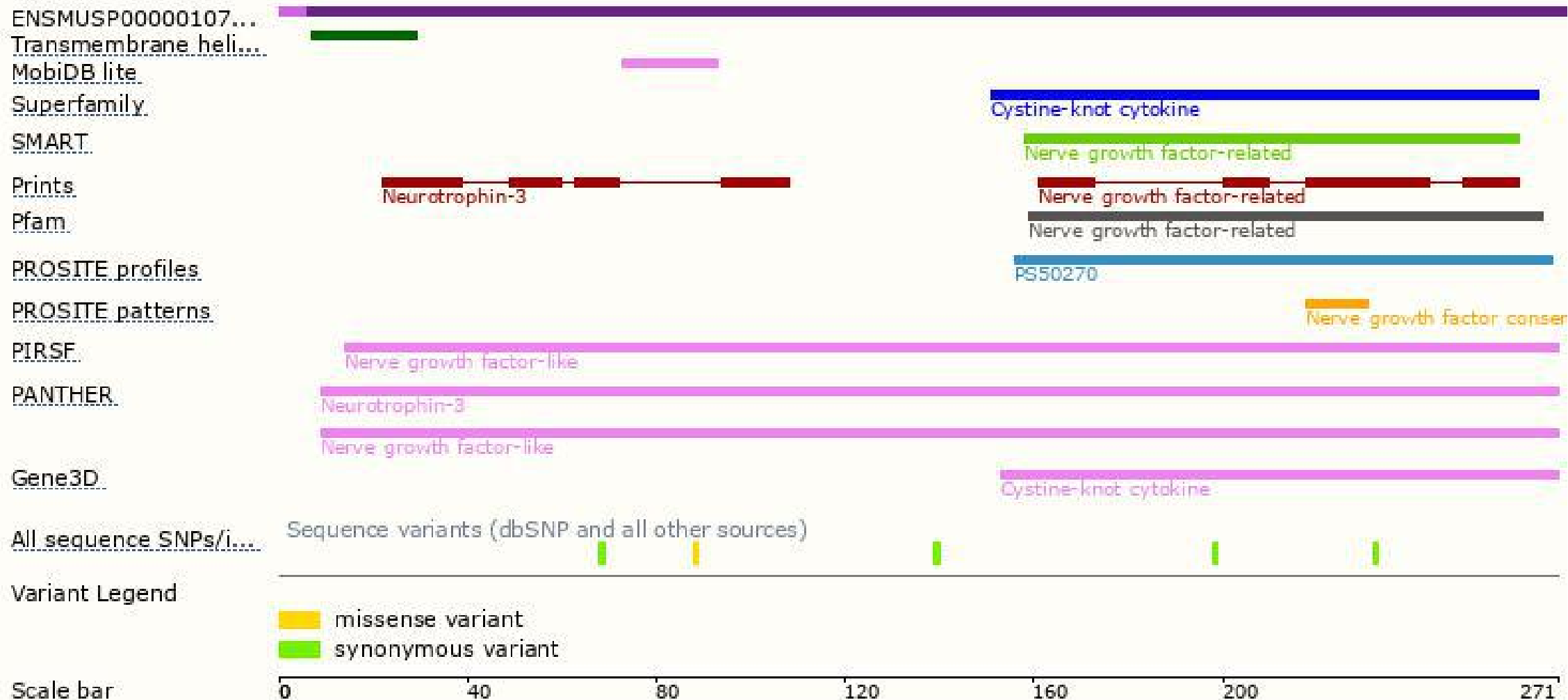


# Genomic location distribution

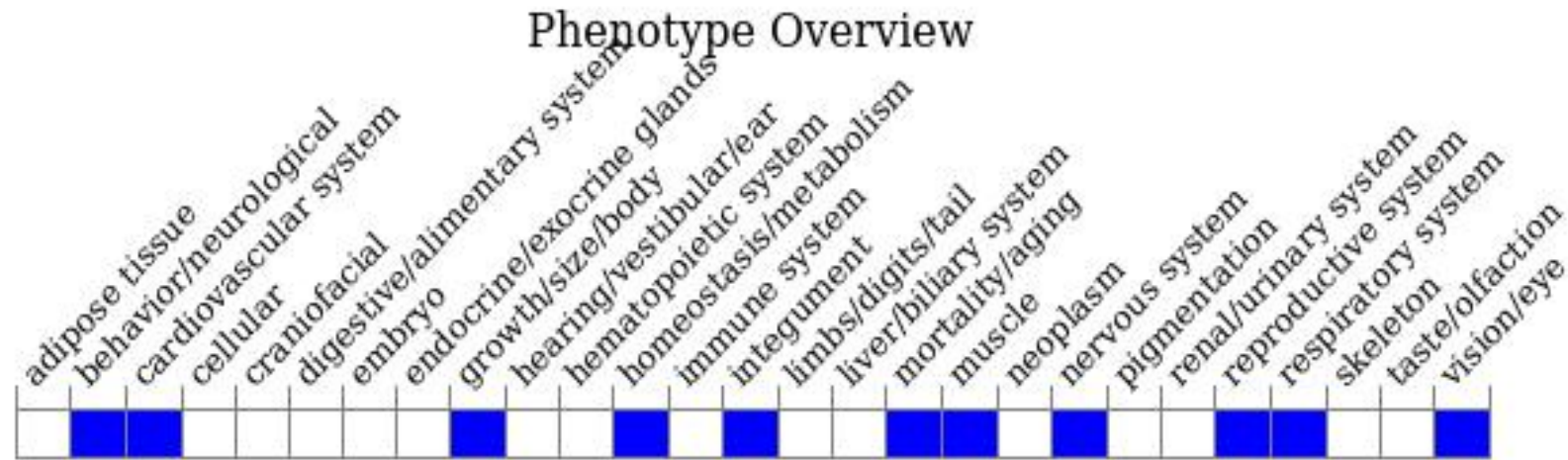




# Protein domain



# 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, homozygotes for targeted null mutations exhibit loss of peripheral sensory and sympathetic neurons, lack of spinal proprioceptive afferents and their sense organs, impaired suckling and movement, and postnatal lethality. Heterozygotes show mild defects.

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