

# *Cntf* Cas9-KO Strategy

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Design Date: 2023-3-21

# Overview

## Target Gene Name

- Cntf

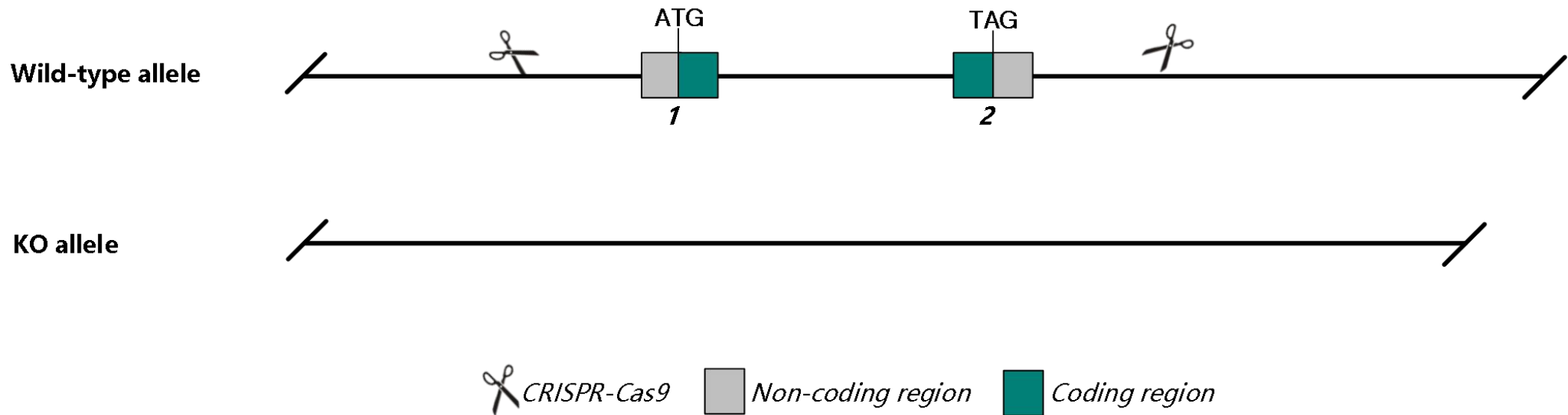
## Project Type

- Cas9-KO

## Genetic Background

- C57BL/6JGpt

# Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Cntf* gene.

# Technical Information

- The *Cntf* gene has 1 transcripts. According to the structure of *Cntf* gene, exon 1-2 of *Cntf*-201 (ENSMUST00000112933.2) transcript is recommended as the knockout region. The region contains all of coding sequences. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Cntf* gene. The brief process is as follows: gRNAs were transcribed in vitro. Cas9 and gRNAs 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 on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.

# Gene Information

## Cntf ciliary neurotrophic factor [ *Mus musculus* (house mouse) ]

Gene ID: 12803, updated on 27-Sep-2022

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### Summary

**Official Symbol** [Cntf](#) provided by [MGI](#)  
**Official Full Name** [ciliary neurotrophic factor](#) provided by [MGI](#)  
**Primary source** [MGI: MGI:88439](#)  
**See related** [Ensembl: ENSMUSG00000079415](#) [AllianceGenome: MGI:88439](#)  
**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](#)  
**Summary** The protein encoded by this gene is a polypeptide hormone whose actions appear to be restricted to the nervous system where it promotes neurotransmitter synthesis and neurite outgrowth in certain neuronal populations. The protein is a potent survival factor for neurons and oligodendrocytes, and it may be involved in reducing tissue destruction during inflammatory attacks. A read-through transcript variant composed of Zfp91 and Cntf sequences has been identified, but it is thought to be non-coding. Read-through transcription of Zfp91 and Cntf has been observed in both human and mouse. [provided by RefSeq, Aug 2008]  
**Expression** Ubiquitous expression in CNS E11.5 (RPKM 1.8), testis adult (RPKM 1.6) and 27 other tissues [See more](#)  
**Orthologs** [human](#) [all](#)  
**NEW** [Try the new Gene table](#)  
[Try the new Transcript table](#)

### Genomic context

**Location:** 19 A; 19 8.73 cM

**Exon count:** 2

[See Cntf in Genome Data Viewer](#)

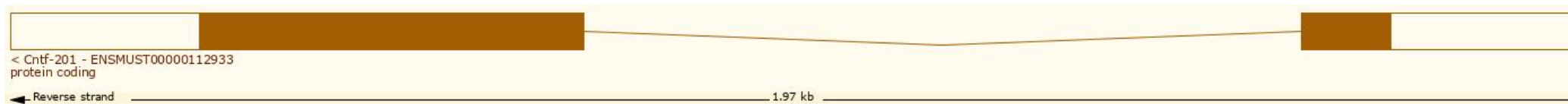
Source: <https://www.ncbi.nlm.nih.gov/>

# Transcript Information

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

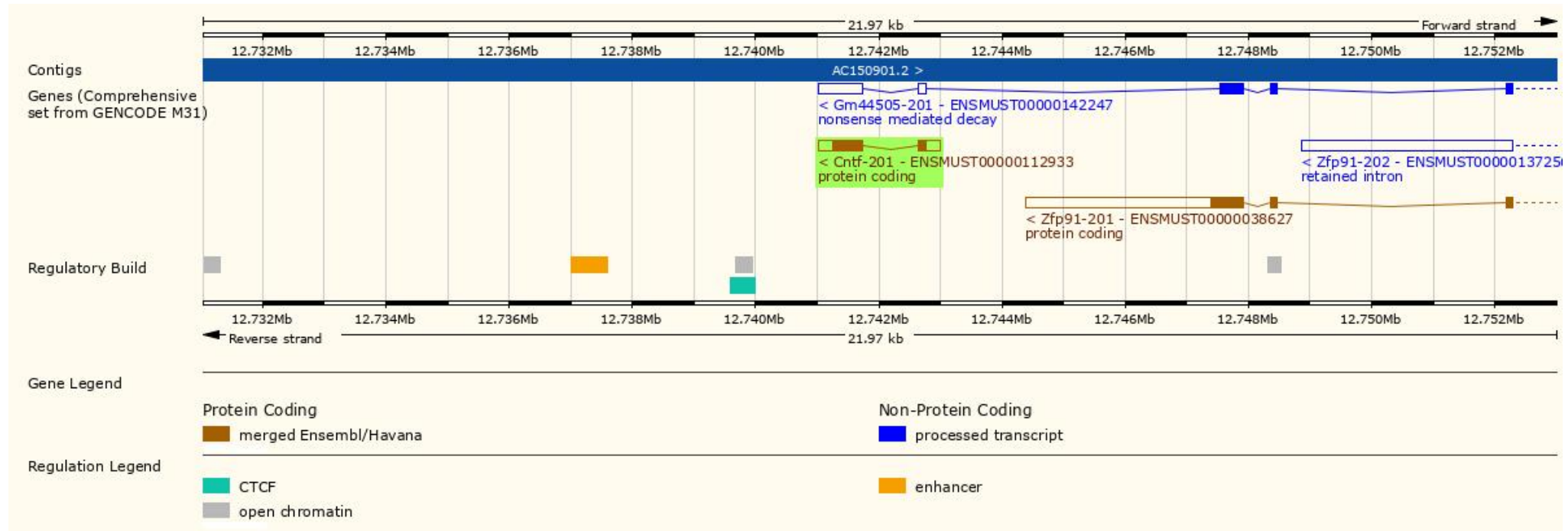
Transcript ID ▼	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
<a href="#">ENSMUST00000112933.2</a>	Cntf-201	1073	<a href="#">198aa</a>	Protein coding	<a href="#">CCDS29637</a>	<a href="#">P51642</a> <a href="#">Q544D1</a>	Ensembl Canonical Gencode basic APPRIS P1 TSL:1

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

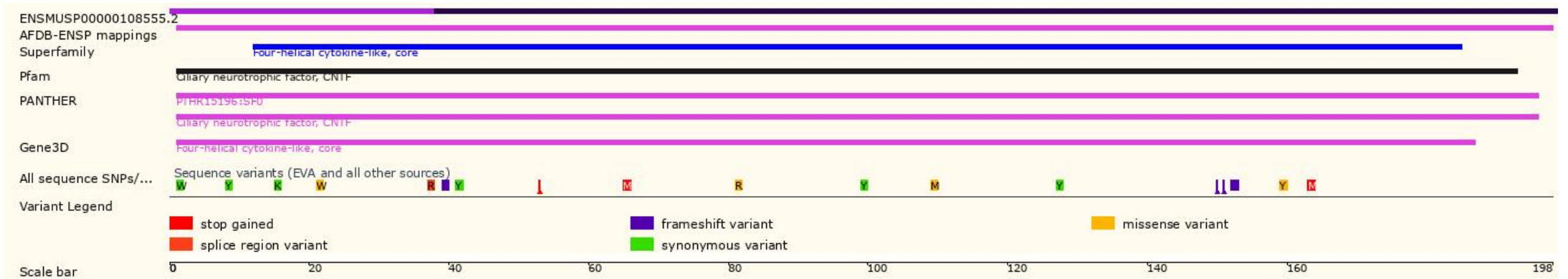


Source: <https://www.ensembl.org>

# Genomic Information

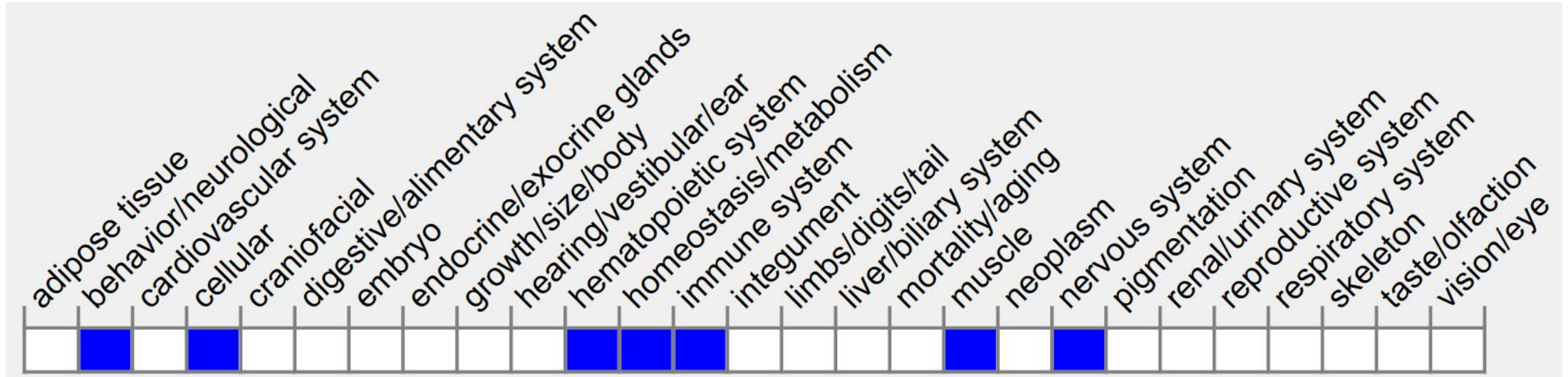


# Protein Information





# Mouse Phenotype Information (MGI)



Mice homozygous for a disruption in this gene display progressive atrophy and degeneration of motor neurons in adulthood and reduced muscle strength. Another allele does not display any overt abnormalities at birth, however motor neuron sprouting does not occur after damage.

# Important Information

- Mice homozygous for a disruption in this gene display progressive atrophy and degeneration of motor neurons in adulthood and reduced muscle strength. Another allele does not display any overt abnormalities at birth, however motor neuron sprouting does not occur after damage.
- The knockout region overlaps with *Gm44505*-201 transcript, which may affect the function of this gene.
- The knockout region is about 1 kb away from the 3' of the *Zfp91* gene, which may affect the regulation of this gene.
- *Cntf* is located on Chr 19. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is on the same chromosome.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risks of the mutation on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.