

Nefm Cas9-KO Strategy

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Project Overview

Project Name

Nefm

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Nefm* gene has 2 transcripts. According to the structure of *Nefm* gene, exon1-exon3 of *Nefm-201* (ENSMUST00000022638.5) transcript is recommended as the knockout region. The region contains all 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 *Nefm* gene. The brief process is as follows: CRISPR/Cas9 system v

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit reduced axon diameter.
- The knockout region is near to the C-terminal of *Gm19216* gene, this strategy may influence the regulatory function of the C-terminal of *Gm19216* gene.
- The *Nefm* gene is located on the Chr14. 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)



Nefm neurofilament, medium polypeptide [*Mus musculus* (house mouse)]

Gene ID: 18040, updated on 15-Oct-2019

Summary

- Official Symbol

Nefm provided by [MGI](#)
- Official Full Name

neurofilament, medium polypeptide provided by [MGI](#)
- Primary source

[MGI:MGI:97314](#)
- See related

[Ensembl:ENSMUSG00000022054](#)
- 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

Nfm; NF-M; Nef3; NF160; NF165
- Expression

Biased expression in cerebellum adult (RPKM 73.7), CNS E11.5 (RPKM 39.8) and 5 other tissues [See more](#)
- Orthologs

[human](#) [all](#)

Genomic context

Location:

14; 14 D1

See Nefm in [Genome Data Viewer](#)

Exon count:

3

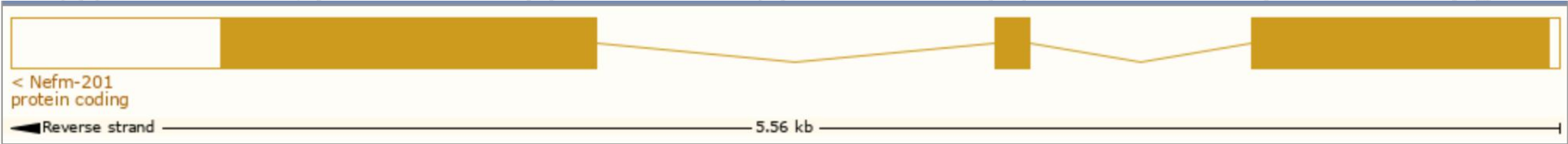
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	14	NC_000080.6 (68119545..68125004, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	14	NC_000080.5 (68737602..68743061, complement)

Transcript information (Ensembl)

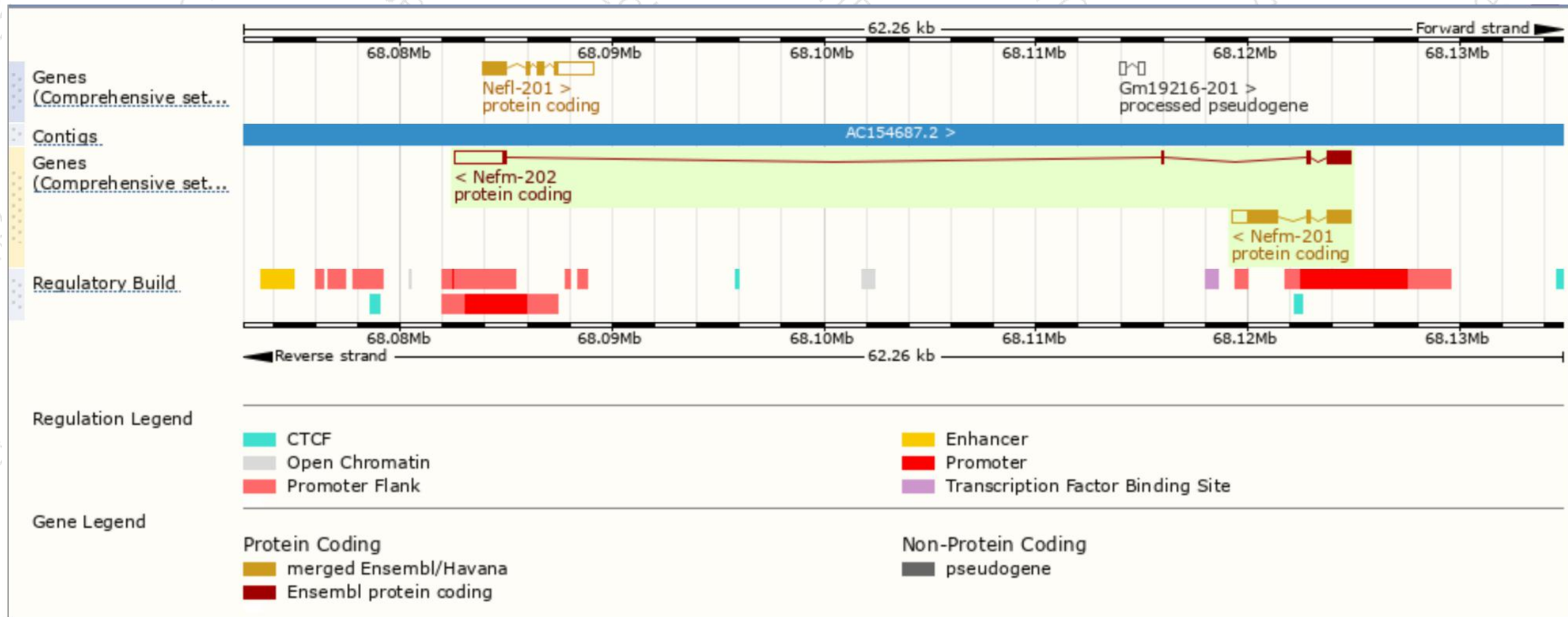
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nefm-201	ENSMUST00000022638.5	3334	848aa	Protein coding	CCDS27233	A0A0R4J036	TSL:1 GENCODE basic APPRIS P2
Nefm-202	ENSMUST00000111089.7	3680	470aa	Protein coding	-	D3YZ35	TSL:1 GENCODE basic APPRIS ALT2

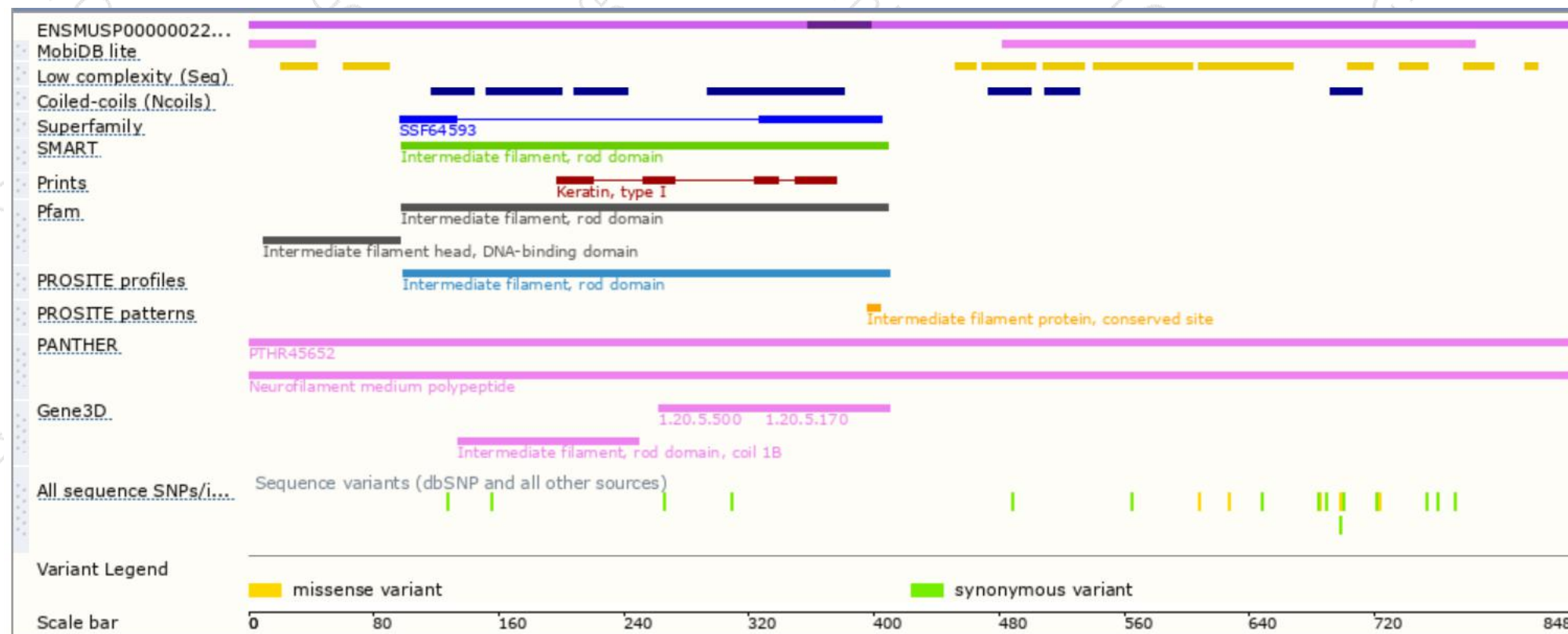
The strategy is based on the design of *Nefm-201* transcript,The transcription is shown below



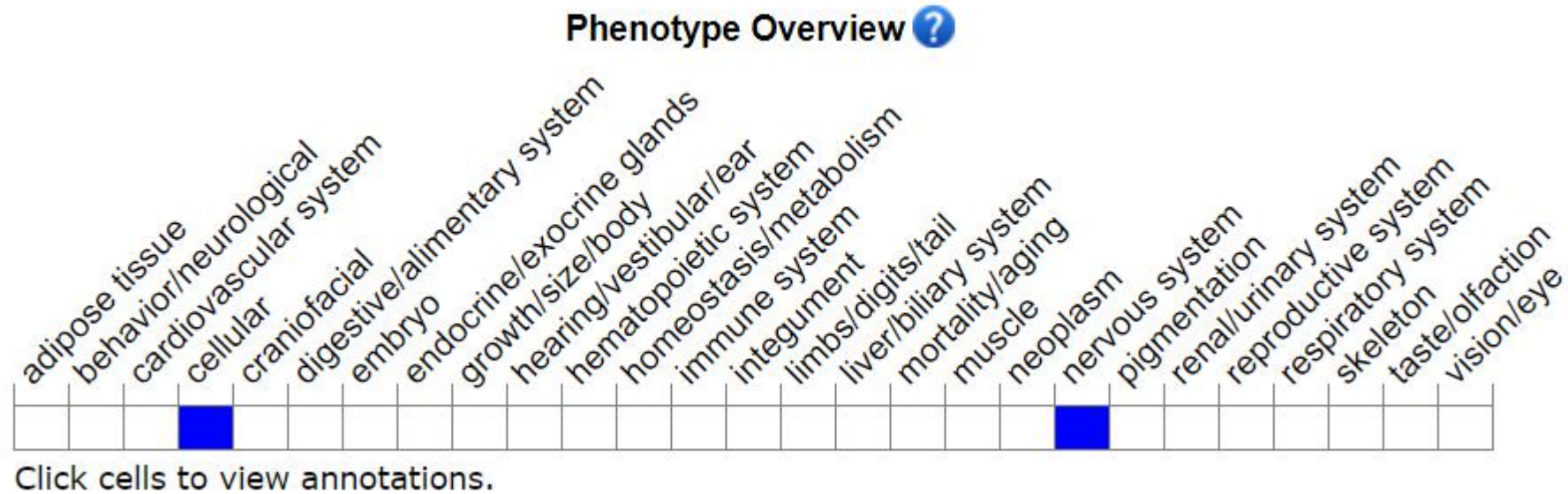
Genomic location distribution



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/>).

Mice homozygous for a knock-out allele exhibit reduced axon diameter.

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

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