

***Neurog1* Cas9-CKO Strategy**

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Project Overview

Project Name

Neurog1

Project type

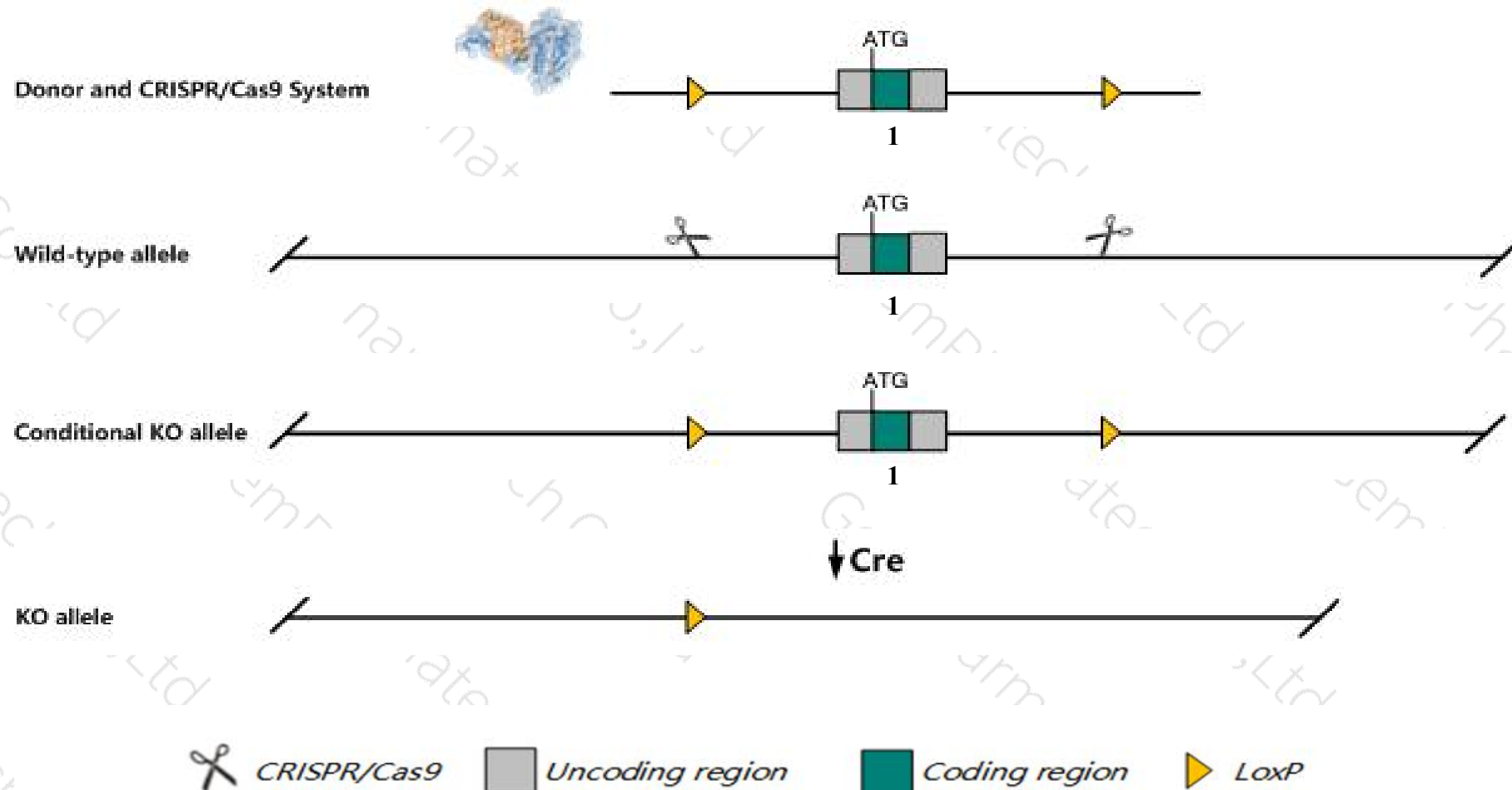
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Neurog1* gene. The schematic diagram is as follows:



Technical routes

- The *Neurog1* gene has 1 transcript. According to the structure of *Neurog1* gene, exon1 of *Neurog1-201*(ENSMUST00000058475.5) 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 *Neurog1* 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 a targeted null mutation exhibit defects in midbrain, dorsal root sensory ganglia and a subset of cranial ganglia. Mutants are born alive, but fail to nurse, and die within 12 hours.
- The *Neurog1* 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)

Neurog1 neurogenin 1 [Mus musculus (house mouse)]

Gene ID: 18014, updated on 13-Mar-2020

Summary



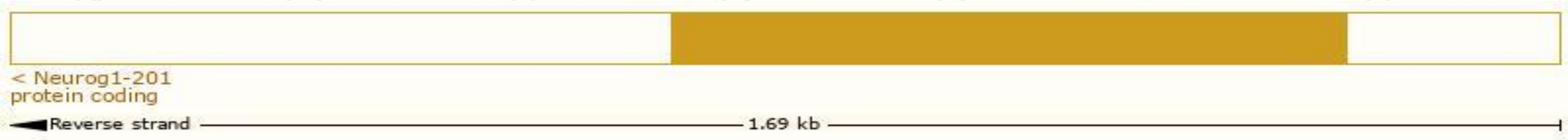
Official Symbol	Neurog1 provided by MGI
Official Full Name	neurogenin 1 provided by MGI
Primary source	MGI:MGI:107754
See related	Ensembl:ENSMUSG000000048904
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AKA, Math4C, Neurod3, bHLHa6, ngn1
Orthologs	human all

Transcript information (Ensembl)

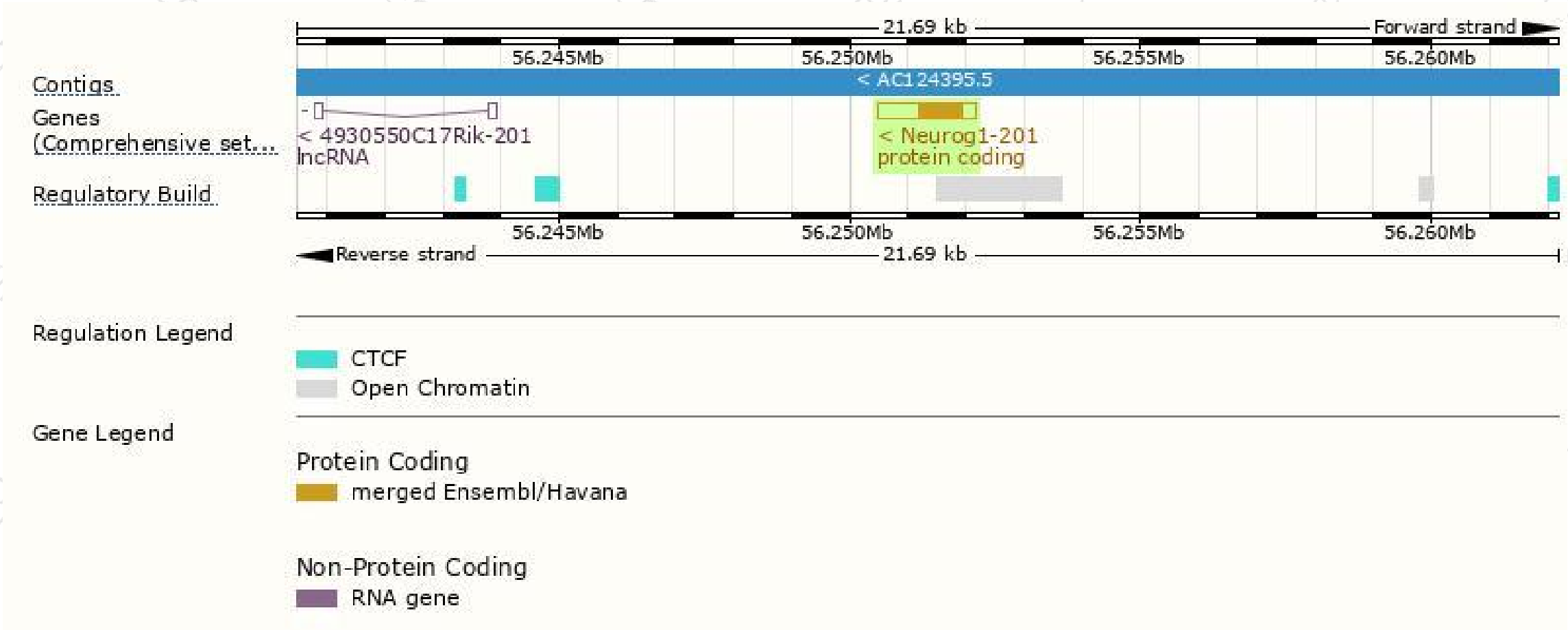
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Neurog1-201	ENSMUST00000058475.5	1686	244aa	Protein coding	CCDS26559	P70660	TSL:NA GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1

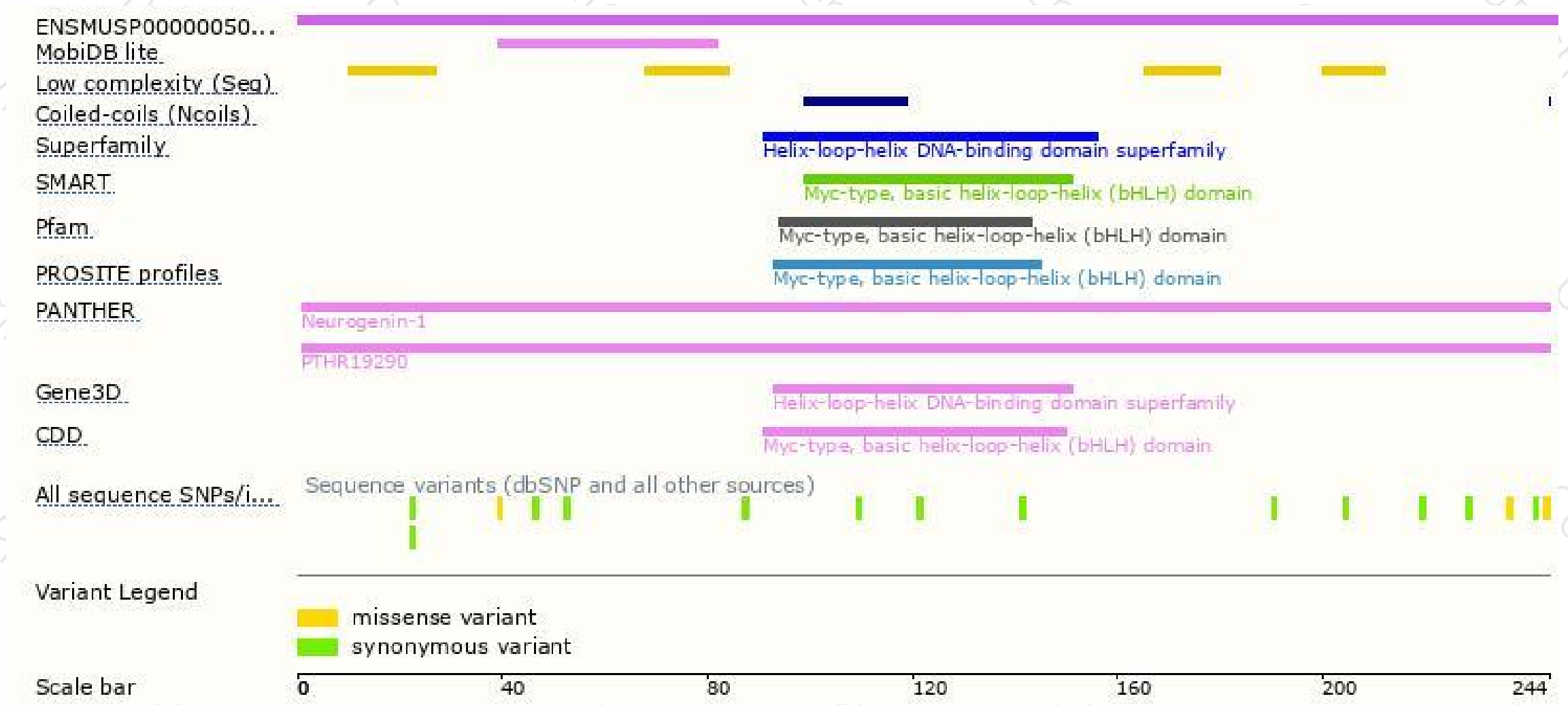
The strategy is based on the design of *Neurog1-201* transcript, the transcription is shown below:



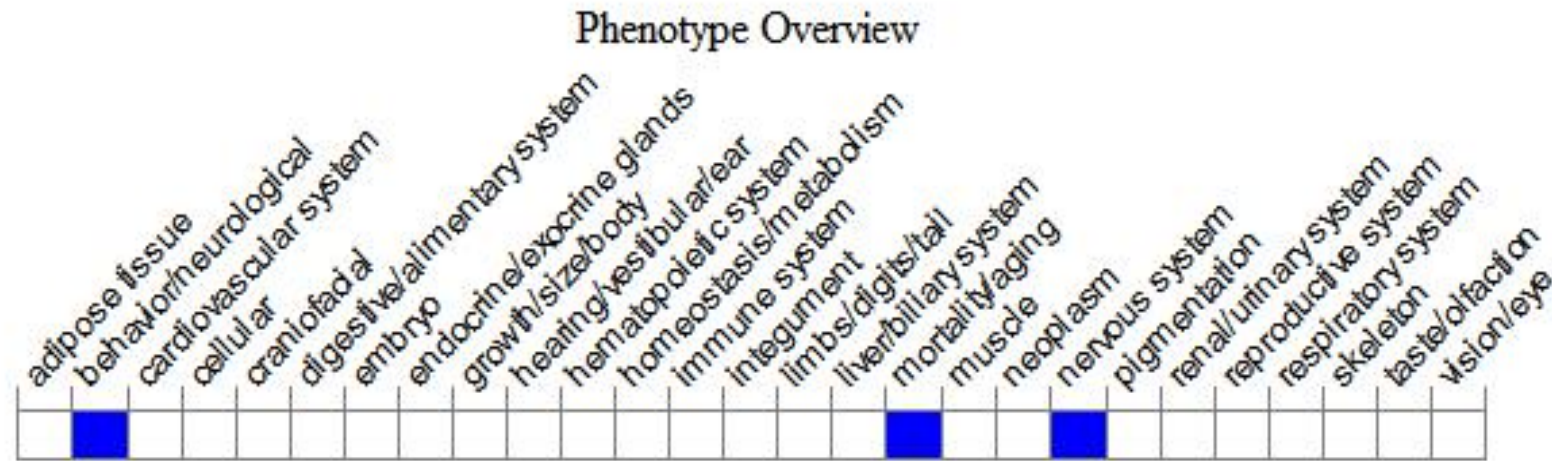
Genomic location distribution



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, homozygotes for a targeted null mutation exhibit defects in midbrain, dorsal root sensory ganglia and a subset of cranial ganglia. Mutants are born alive, but fail to nurse, and die within 12 hours.

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

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