

Ndrp1 Cas9-KO Strategy

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Reviewer:

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Design Date:

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Project Overview

Project Name

Ndrp1

Project type

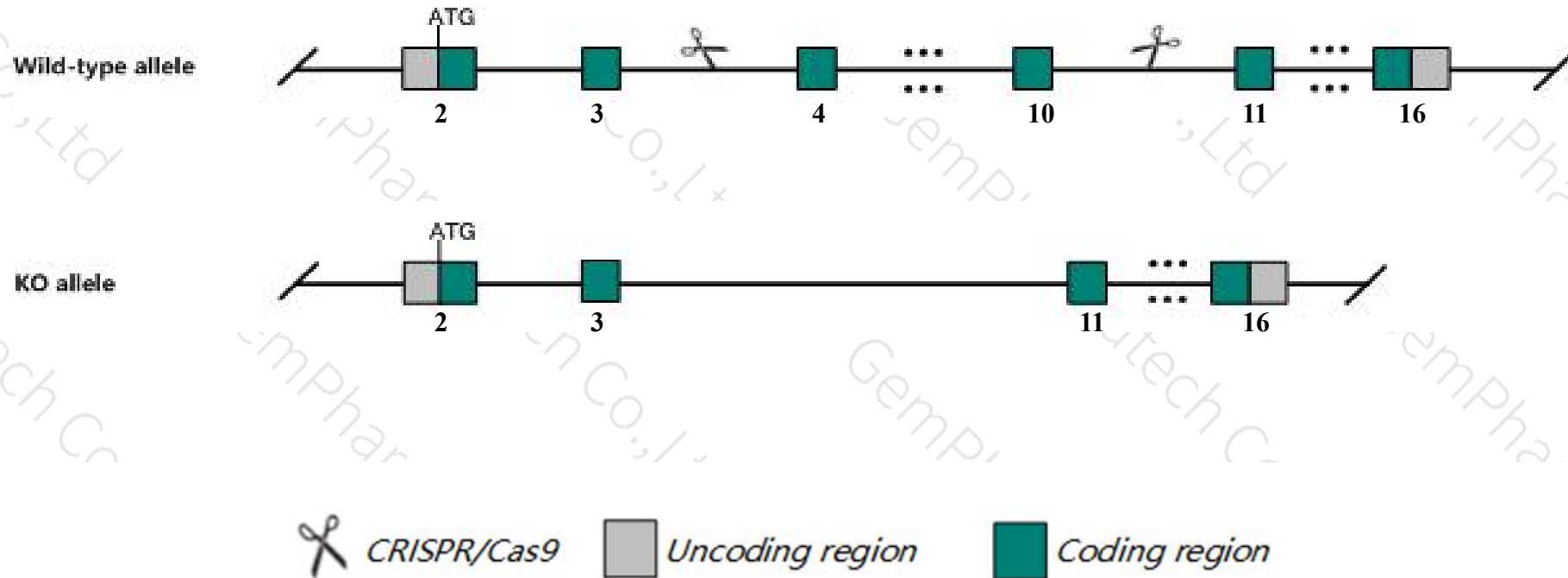
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Ndrgr1* gene has 13 transcripts. According to the structure of *Ndrgr1* gene, exon4-exon10 of *Ndrgr1-201* (ENSMUST00000005256.13) transcript is recommended as the knockout region. The region contains 599bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ndrgr1* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI data, Homozygous null mice exhibit a progressive demyelinating disorder of the peripheral nerves with hindlimb weakness, some mice die between 1 to 10 months.
- The *Ndrp1* gene is located on the Chr15. 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)

NdrG1 N-myc downstream regulated gene 1 [*Mus musculus* (house mouse)]

Gene ID: 17988, updated on 21-Oct-2019

Summary

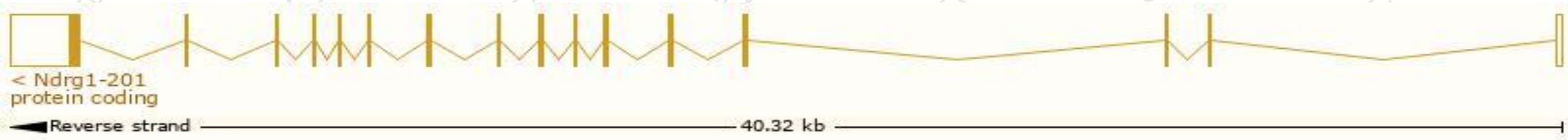
| | |
|---------------------------|---|
| Official Symbol | NdrG1 provided by MGI |
| Official Full Name | N-myc downstream regulated gene 1 provided by MGI |
| Primary source | MGI:MGI:1341799 |
| See related | Ensembl:ENSMUSG00000005125 |
| Gene type | protein coding |
| RefSeq status | VALIDATED |
| Organism | Mus musculus |
| Lineage | Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |
| Also known as | RTP; DRG1; NMSL; Ndr1; NdrI; TDD5; CAP43; CMT4D; HMSNL; PROXY1 |
| Expression | Biased expression in kidney adult (RPKM 707.1), liver E18 (RPKM 98.7) and 4 other tissues See more |
| Orthologs | human all |

Transcript information (Ensembl)

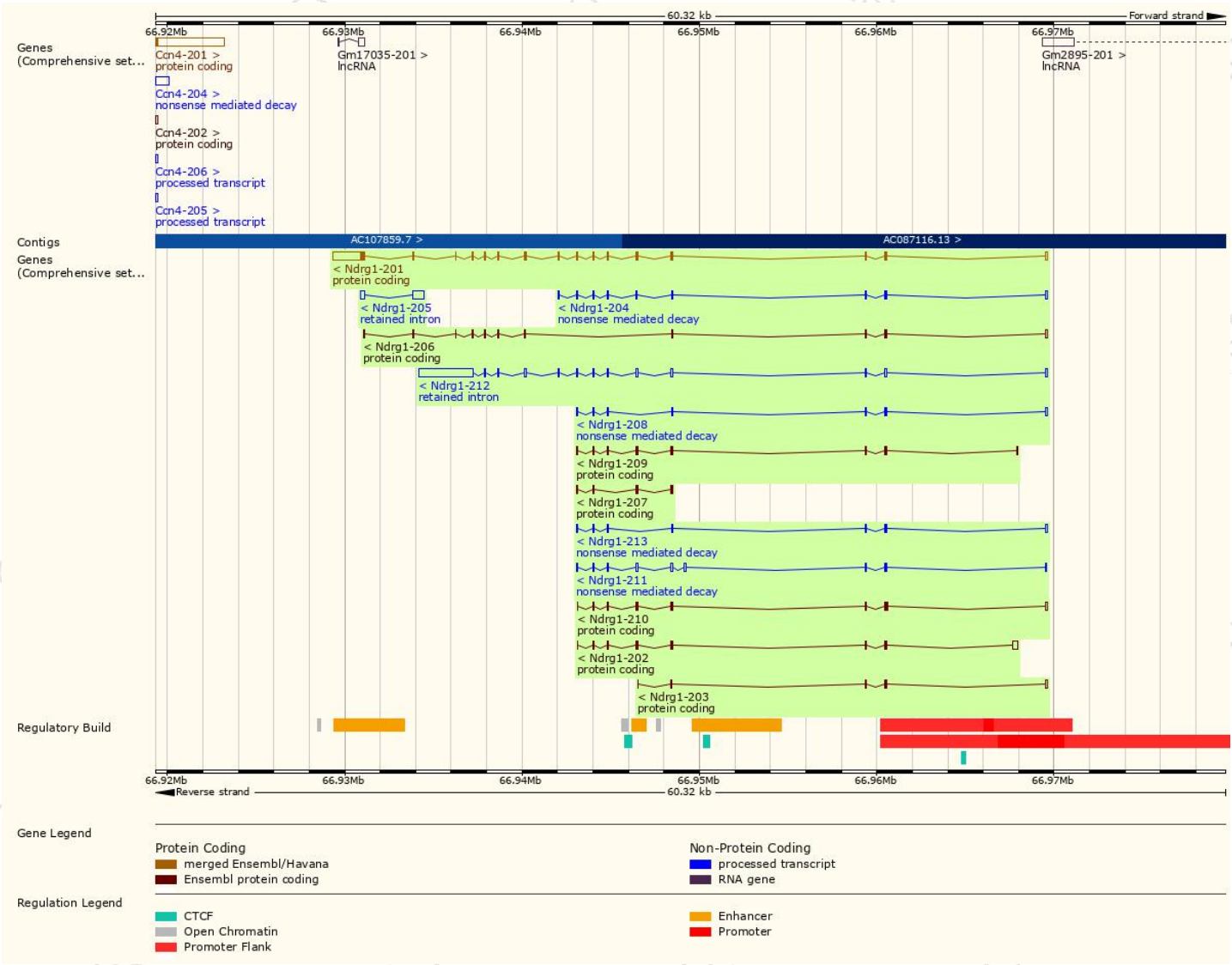
The gene has 13 transcripts,all transcripts are shown below:

| Name | Transcript ID | bp | Protein | Translation ID | Biotype | CCDS | UniProt | Flags |
|----------|---------------------------------------|------|-----------------------|--------------------------------------|-------------------------|---------------------------|---|--------------------------------|
| Ndr1-201 | ENSMUST00000005256.13 | 2889 | 394aa | ENSMUSP00000005256.6 | Protein coding | CCDS37092 | Q545R3 Q62433 | TSL:1 Gencode basic APPRIS P1 |
| Ndr1-202 | ENSMUST00000163496.7 | 738 | 155aa | ENSMUSP00000130584.1 | Protein coding | - | E9Q5I8 | CDS 3' incomplete TSL:5 |
| Ndr1-210 | ENSMUST00000170903.7 | 667 | 157aa | ENSMUSP00000127302.1 | Protein coding | - | E9Q3F9 | CDS 3' incomplete TSL:5 |
| Ndr1-209 | ENSMUST00000168979.7 | 583 | 174aa | ENSMUSP00000126985.1 | Protein coding | - | E9PVF3 | CDS 3' incomplete TSL:3 |
| Ndr1-206 | ENSMUST00000166420.7 | 577 | 141aa | ENSMUSP00000127099.1 | Protein coding | - | E9Q514 | CDS 3' incomplete TSL:3 |
| Ndr1-207 | ENSMUST00000167817.7 | 356 | 119aa | ENSMUSP00000127075.1 | Protein coding | - | F6VLR8 | CDS 5' and 3' incomplete TSL:3 |
| Ndr1-203 | ENSMUST00000164070.1 | 316 | 53aa | ENSMUSP00000126091.1 | Protein coding | - | E9Q147 | CDS 3' incomplete TSL:5 |
| Ndr1-211 | ENSMUST00000171266.7 | 759 | 39aa | ENSMUSP00000129093.1 | Nonsense mediated decay | - | E9Q0J8 | TSL:5 |
| Ndr1-204 | ENSMUST00000164675.7 | 591 | 93aa | ENSMUSP00000130150.1 | Nonsense mediated decay | - | E9Q7V2 | TSL:3 |
| Ndr1-208 | ENSMUST00000168542.7 | 473 | 49aa | ENSMUSP00000127940.1 | Nonsense mediated decay | - | E9PZC7 | TSL:5 |
| Ndr1-213 | ENSMUST00000172447.7 | 444 | 53aa | ENSMUSP00000130281.1 | Nonsense mediated decay | - | E9Q7G8 | TSL:5 |
| Ndr1-212 | ENSMUST00000171569.7 | 4049 | No protein | - | Retained intron | - | - | TSL:1 |
| Ndr1-205 | ENSMUST00000165966.1 | 849 | No protein | - | Retained intron | - | - | TSL:2 |

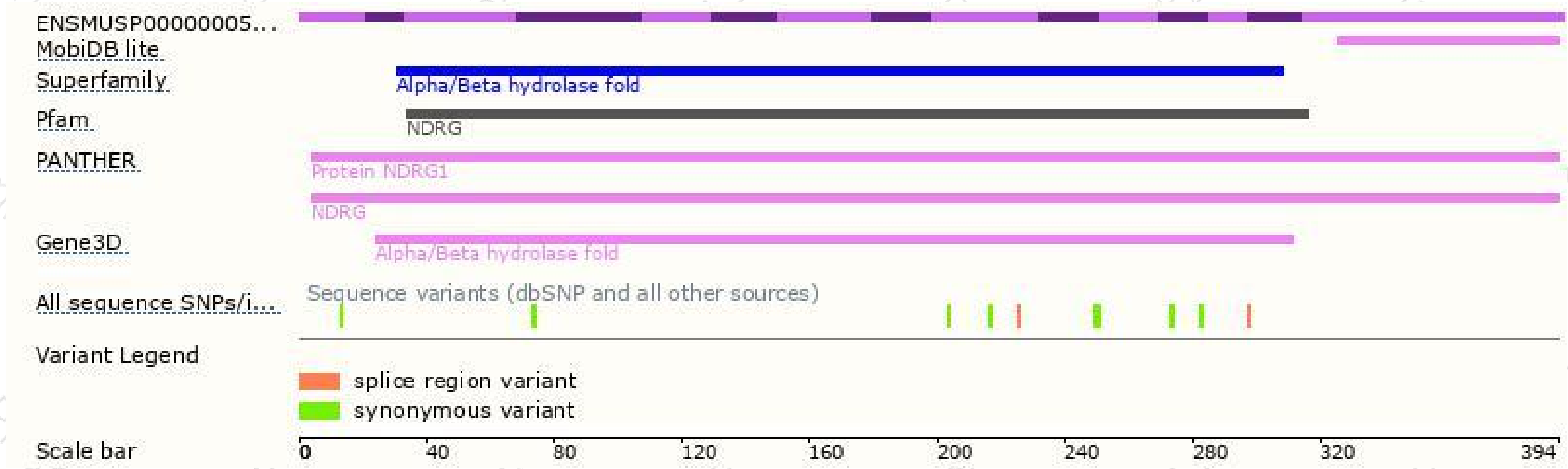
The strategy is based on the design of *Ndr1-201* transcript,The transcription is shown below



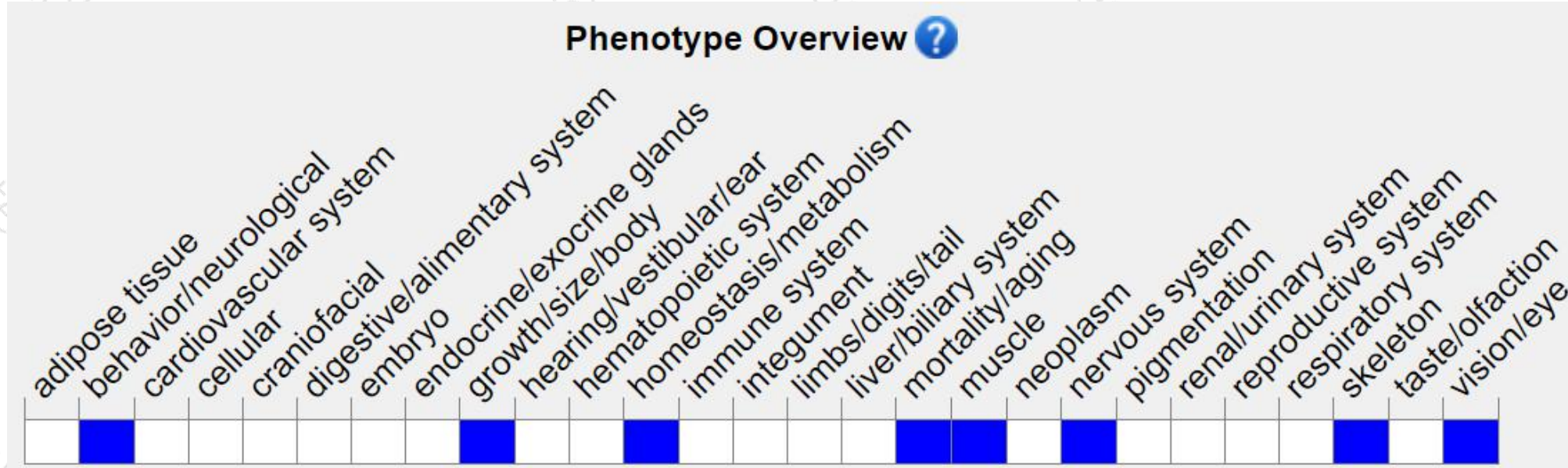
Genomic location distribution



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, Homozygous null mice exhibit a progressive demyelinating disorder of the peripheral nerves with hindlimb weakness, some mice die between 1 to 10 months.

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

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