

Cd46 Cas9-CKO Strategy

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Project Overview

Project Name

Cd46

Project type

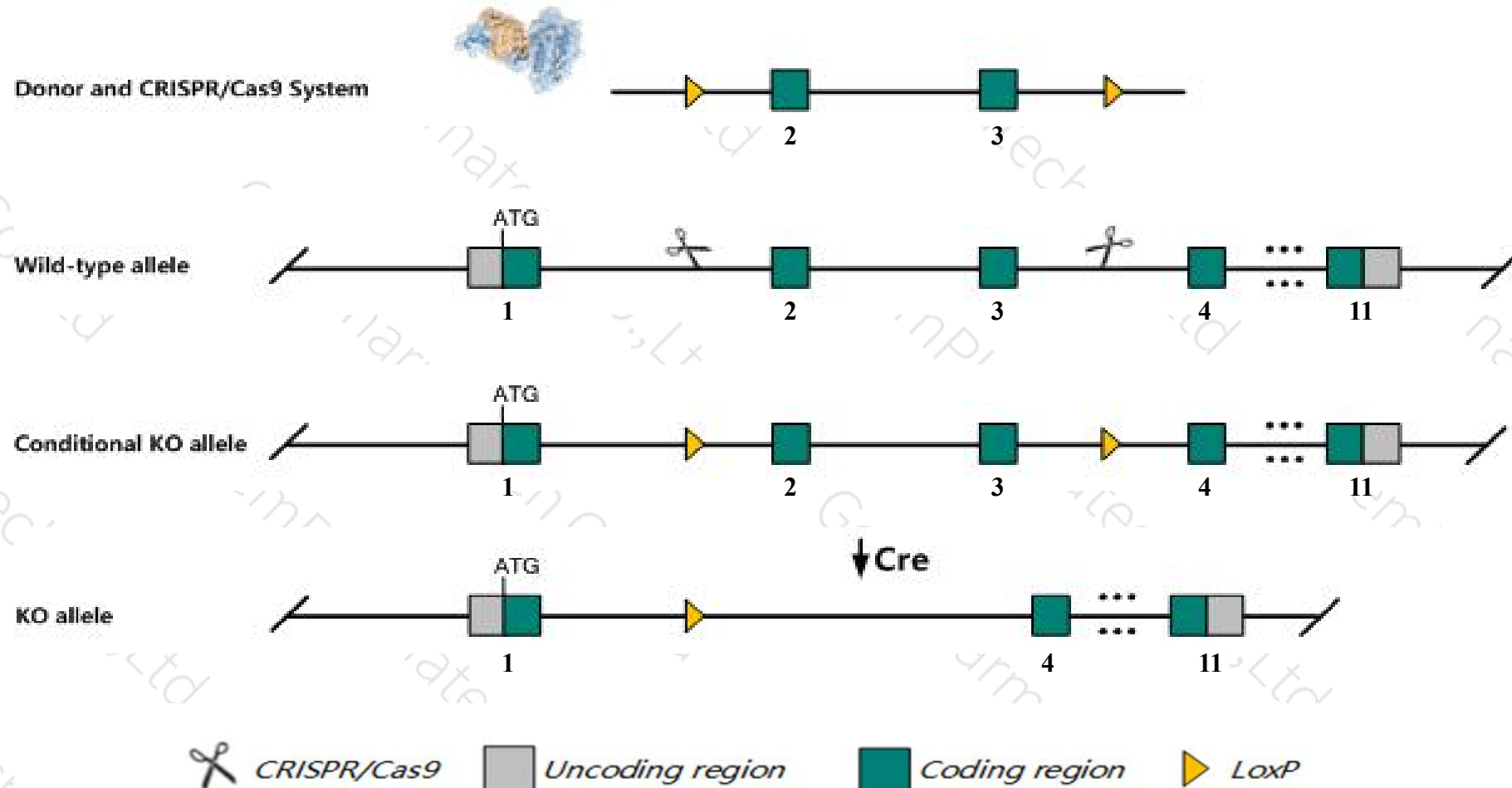
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cd46* gene. The schematic diagram is as follows:



- The *Cd46* gene has 4 transcripts. According to the structure of *Cd46* gene, exon2-exon3 of *Cd46-203* (ENSMUST00000162650.7) transcript is recommended as the knockout region. The region contains 292bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cd46* 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, Homozygous mutation of this gene results in increased litter sizes sired by mutant males. Another homozygous null mouse shows increased susceptibility to induced choroid neovascularization.
- Transcript *Cd46*-202&204 may not be affected.
- The floxed region is near to the N-terminal of *Gm37132* gene, this strategy may influence the regulatory function of the N-terminal of *Gm37132* gene.
- The *Cd46* gene is located on the Chr1. 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)

Cd46 CD46 antigen, complement regulatory protein [*Mus musculus* (house mouse)]

Gene ID: 17221, updated on 12-Aug-2019

Summary

- Official Symbol** Cd46 provided by [MGI](#)
- Official Full Name** CD46 antigen, complement regulatory protein provided by [MGI](#)
- Primary source** [MGI:MGI:1203290](#)
- See related** [Ensembl:ENSMUSG00000016493](#)
- 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** Mcp
- Expression** Broad expression in CNS E18 (RPKM 1.4), cortex adult (RPKM 1.4) and 23 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

Genomic context

Location: 1 H6; 1 98.41 cM

See Cd46 in [Genome Data Viewer](#)

Exon count: 16

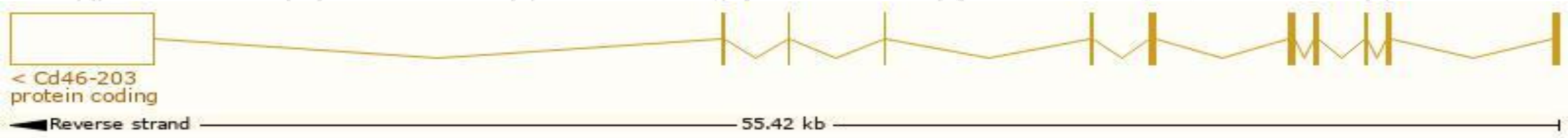
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	1	NC_000067.6 (195038971..195098784, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	1	NC_000067.5 (196868094..196918442, complement)

Transcript information (Ensembl)

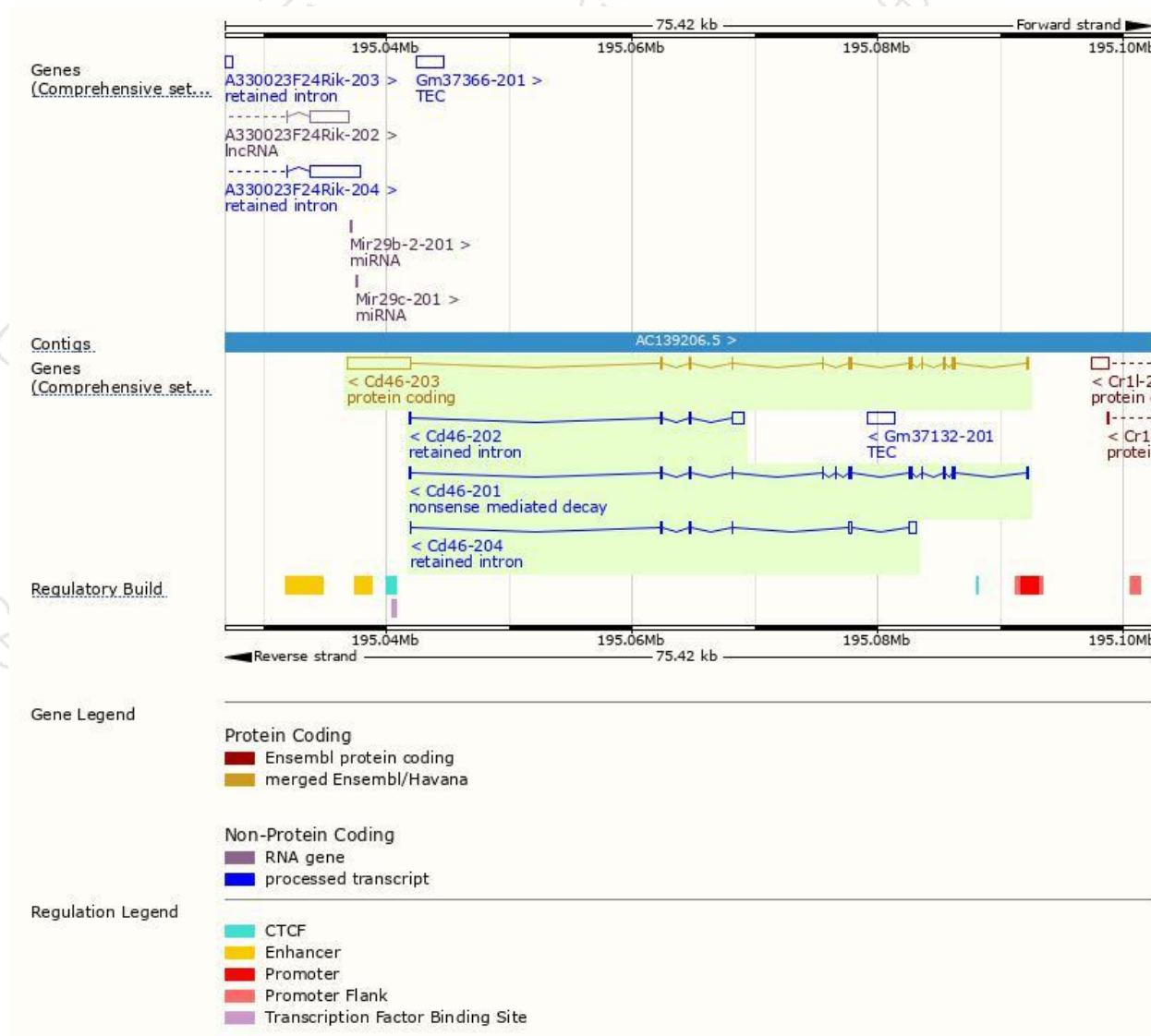
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cd46-203	ENSMUST00000162650.7	6288	365aa	Protein coding	CCDS35828	O88174	TSL:1 GENCODE basic APPRIS P1
Cd46-201	ENSMUST00000159563.7	1263	300aa	Nonsense mediated decay	-	A0A0R4J1X9	TSL:1
Cd46-202	ENSMUST00000161772.7	1264	No protein	Retained intron	-	-	TSL:2
Cd46-204	ENSMUST00000162951.1	907	No protein	Retained intron	-	-	TSL:5

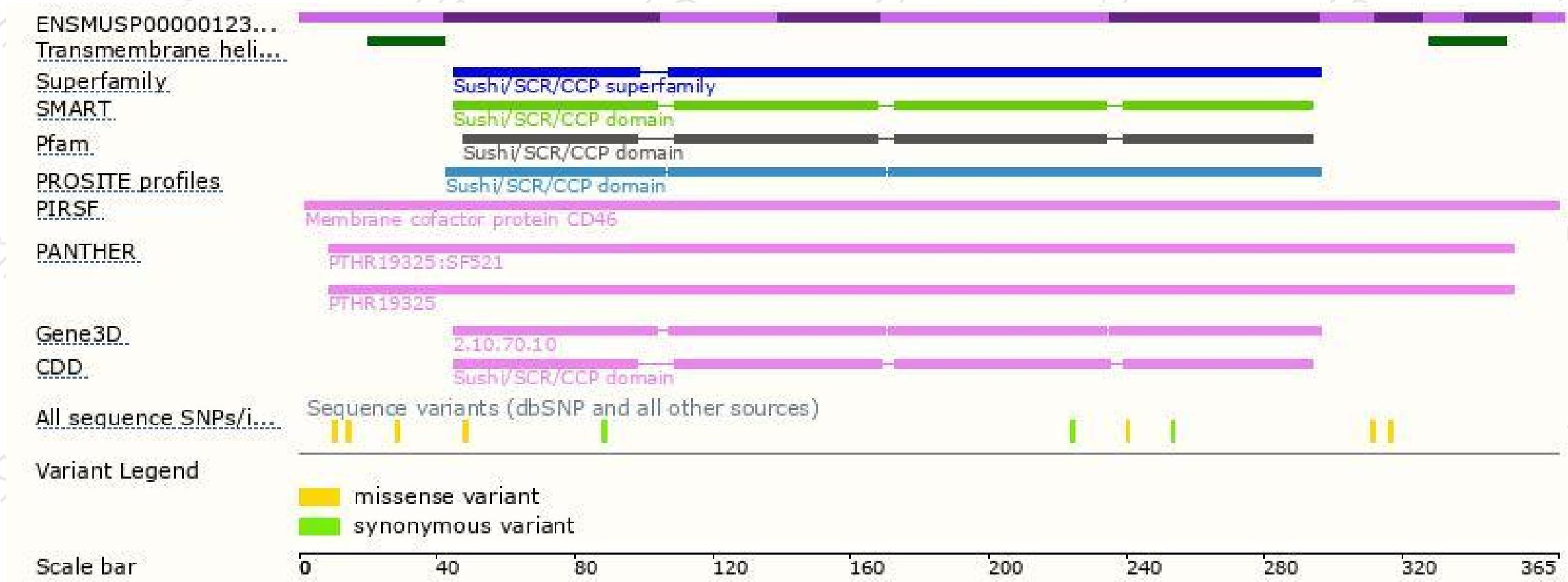
The strategy is based on the design of *Cd46-203* transcript,The transcription is shown below



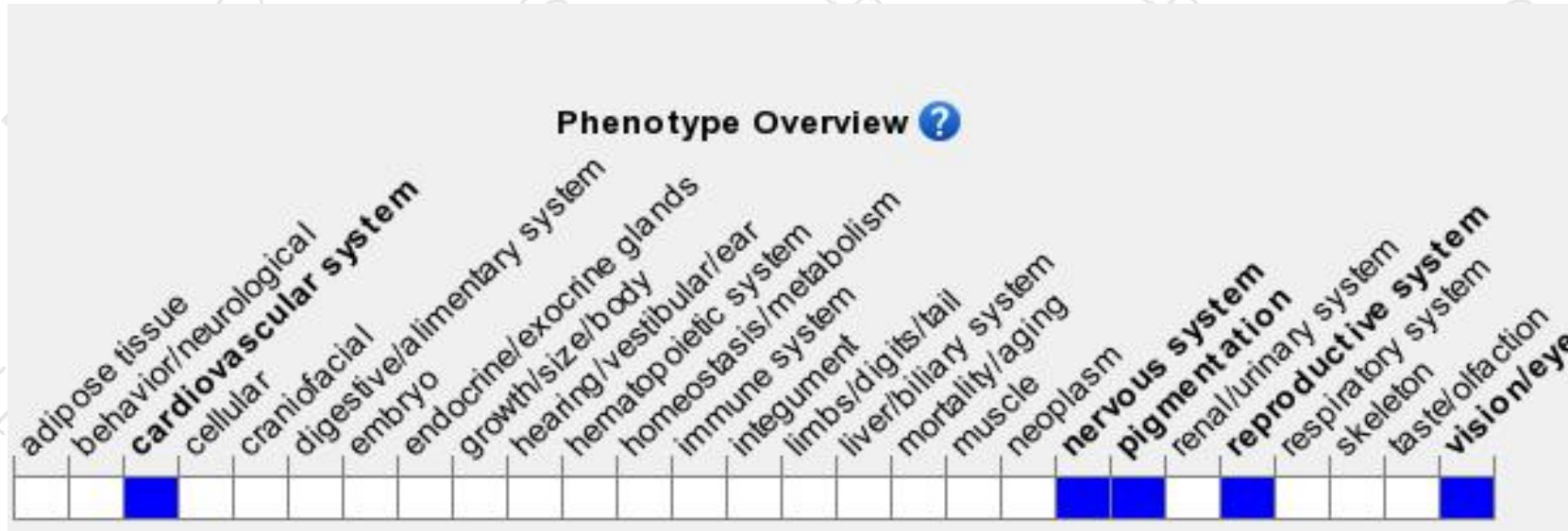
Genomic location distribution



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 mutation of this gene results in increased litter sizes sired by mutant males. Another homozygous null mouse shows increased susceptibility to induced choroid neovascularization.

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

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