

Fxn Cas9-CKO Strategy

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Project Overview

Project Name

Fxn

Project type

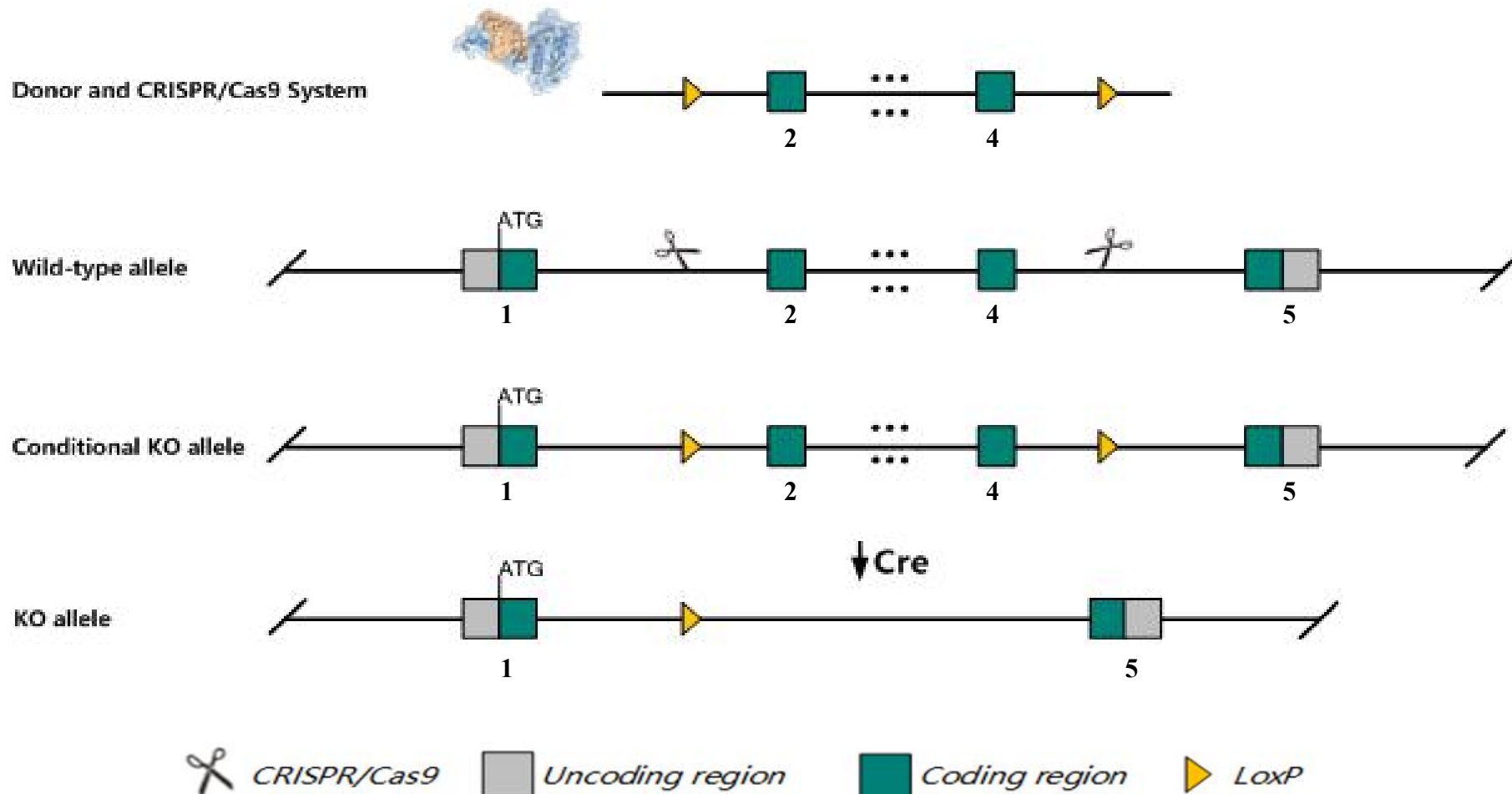
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



The *Fxn* gene has 3 transcripts. According to the structure of *Fxn* gene, exon2-exon4 of *Fxn-201* (ENSMUST00000081333.10) transcript is recommended as the knockout region. The region contains 314bp coding sequence. Knock out the region will result in disruption of protein function.

In this project we use CRISPR/Cas9 technology to modify *Fxn* 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 early post-implantation lethality, in the absence of intramitochondrial iron accumulation. Conditional knockouts, specific to striated muscle and neuron/striated muscle, show cardiac hypertrophy and large sensory neuron dysfunction, respectively.

The *Fxn* gene is located on the Chr19. 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.

Fxn frataxin [Mus musculus (house mouse)]

Gene ID: 14297, updated on 31-Jan-2019

Summary

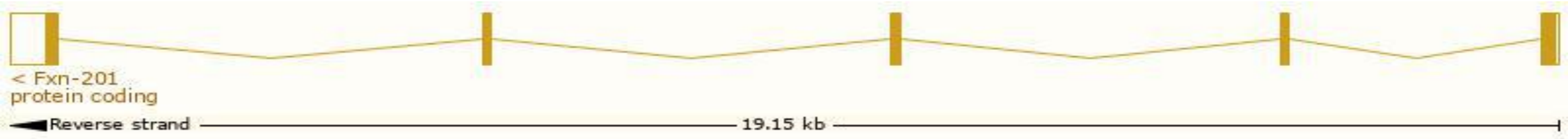
Official Symbol	Fxn provided by MGI
Official Full Name	frataxin provided by MGI
Primary source	MGI:MGI:1096879
See related	Ensembl:ENSMUSG00000059363
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	FA, FARR, Frda, X25
Expression	Ubiquitous expression in adrenal adult (RPKM 20.6), liver E14.5 (RPKM 15.3) and 28 other tissues See more
Orthologs	human all

Transcript information Ensembl

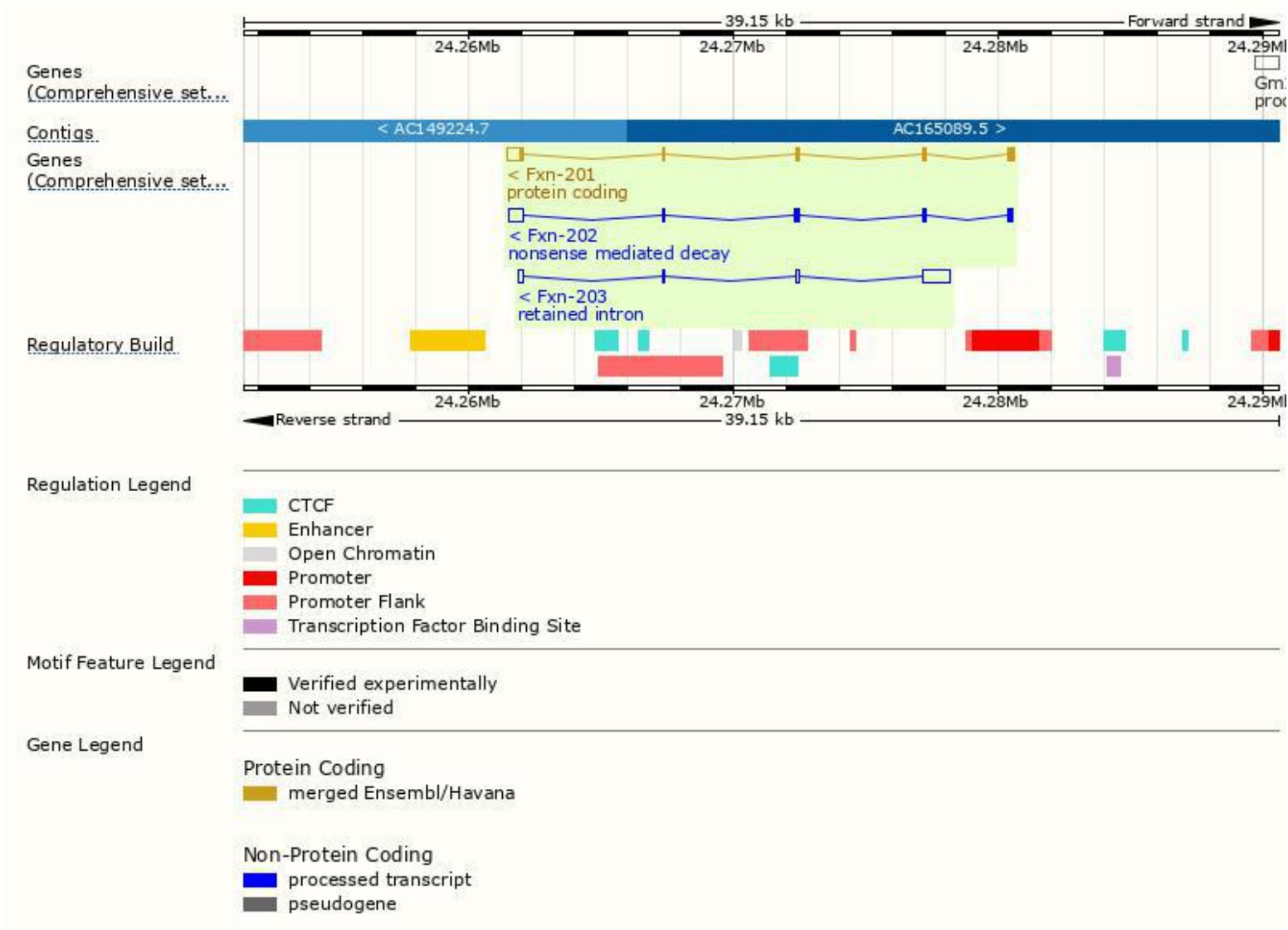
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fxn-201	ENSMUST00000081333.10	1114	207aa	Protein coding	CCDS29711	Q35943 Q3TV21	TSL:1 GENCODE basic APPRIS P1
Fxn-202	ENSMUST00000123684.1	1072	145aa	Nonsense mediated decay	-	E9Q2P9	TSL:1
Fxn-203	ENSMUST00000132688.1	1402	No protein	Retained intron	-	-	TSL:1

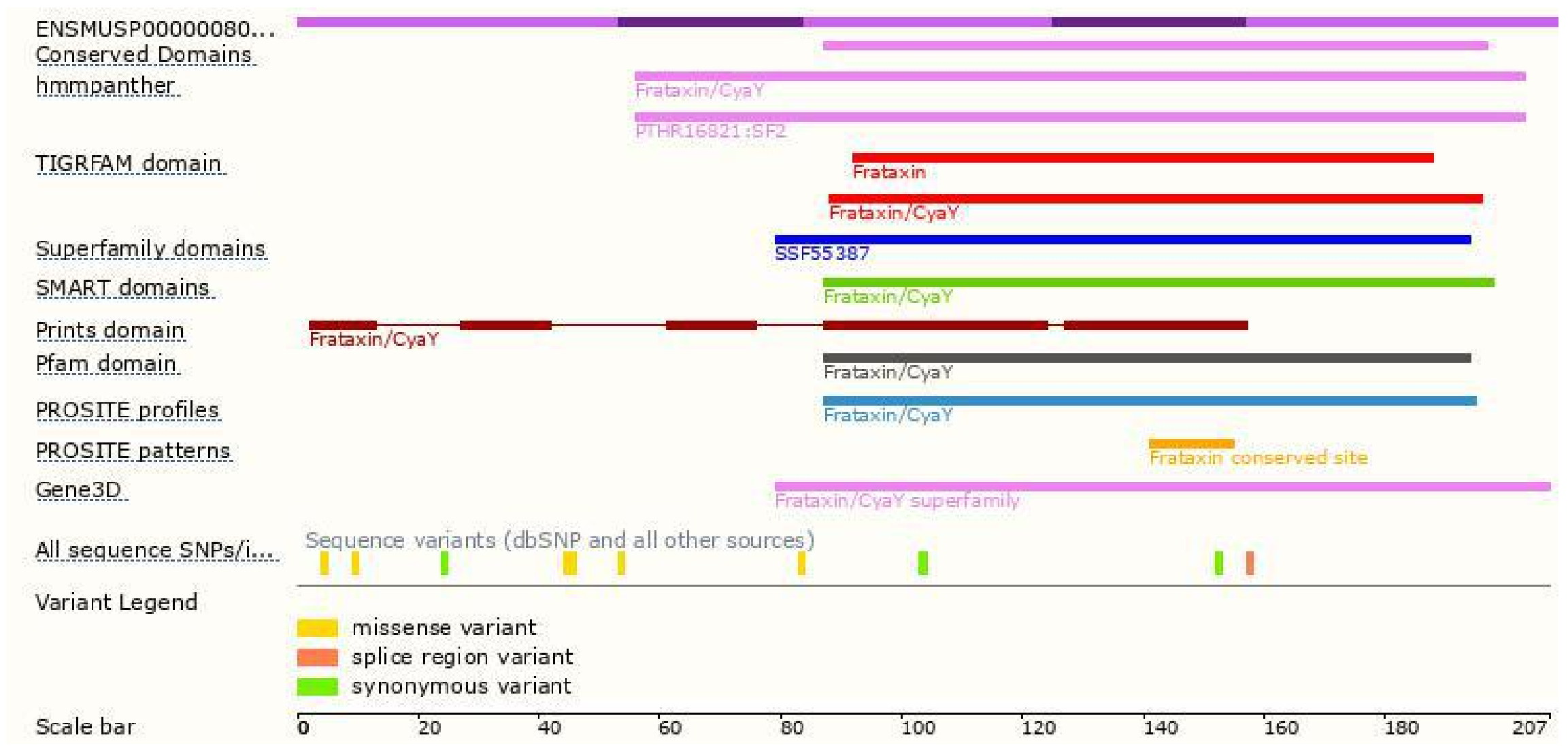
The strategy is based on the design of *Fxn-201* transcript,The transcription is shown below



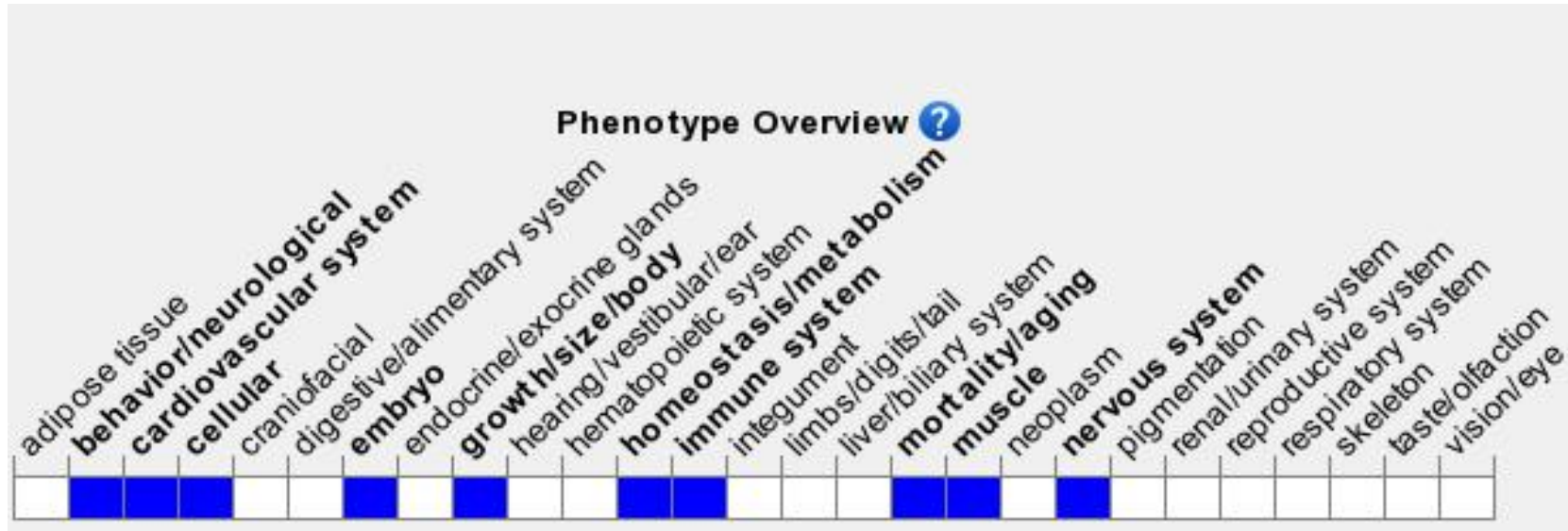
Genomic location distribution



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/>).

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