

Gigyf2 Cas9-KO Strategy

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Project Overview

Project Name

Gigyf2

Project type

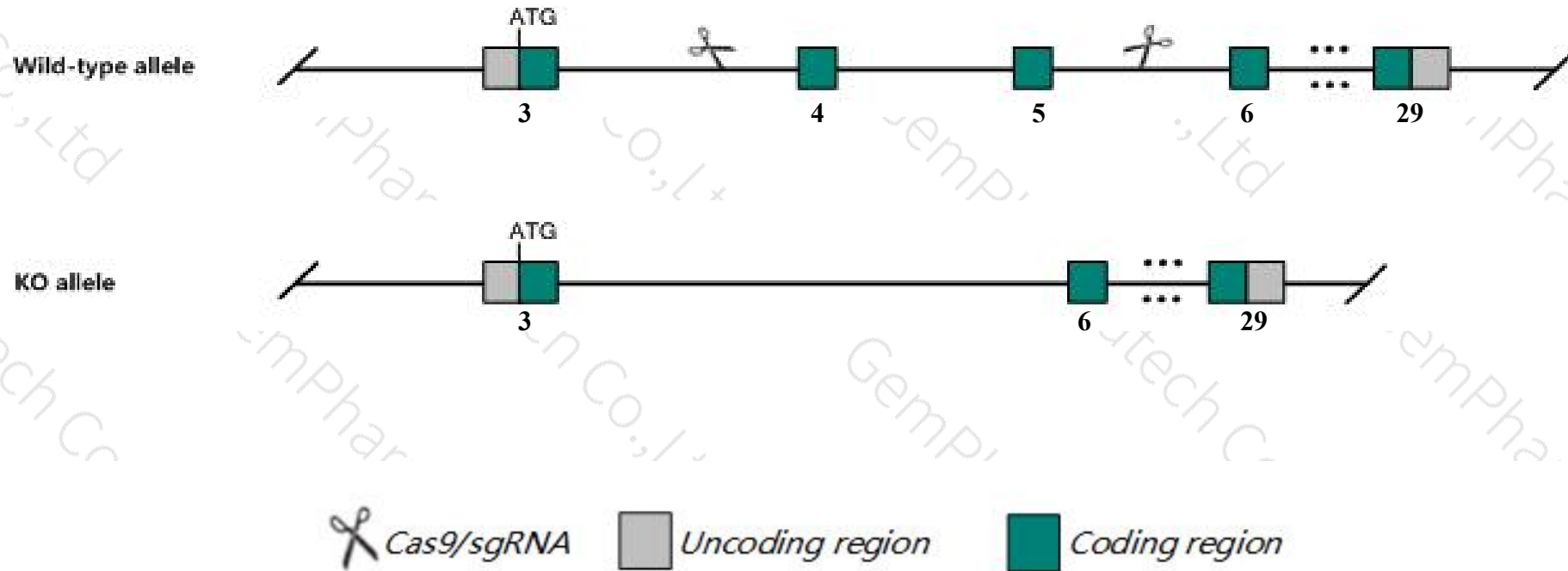
Cas9-KO

Strain background

C57BL/6J

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gigyl2* gene. The schematic diagram is as follows:



- The *Gigyf2* gene has 23 transcripts. According to the structure of *Gigyf2* gene, exon4-exon5 of *Gigyf2-201* (ENSMUST00000027475.14) transcript is recommended as the knockout region. The region contains 226bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Gigyf2* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

- According to the existing MGI data, mice homozygous for a knock-out allele exhibit neonatal and postnatal lethality. Mice heterozygous for a knock-out allele exhibit impaired motor coordination with motor neuron degeneration.
- Transcript *Gigyf2*-203,209,212,213,215 may not be affected.
- The *Gigyf2* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Gigyf2 GRB10 interacting GYF protein 2 [*Mus musculus* (house mouse)]

Gene ID: 227331, updated on 12-Aug-2019

Summary

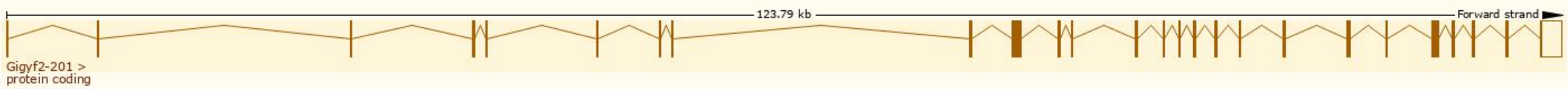
Official Symbol	Gigyf2 provided by MGI
Official Full Name	GRB10 interacting GYF protein 2 provided by MGI
Primary source	MGI:MGI:2138584
See related	Ensembl:ENSMUSG00000048000
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Tnrc15; AI852361; AW259676; BC006835; mKIAA0642; 2610016F01Rik; A830080H02Rik
Expression	Ubiquitous expression in placenta adult (RPKM 11.1), CNS E11.5 (RPKM 9.9) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

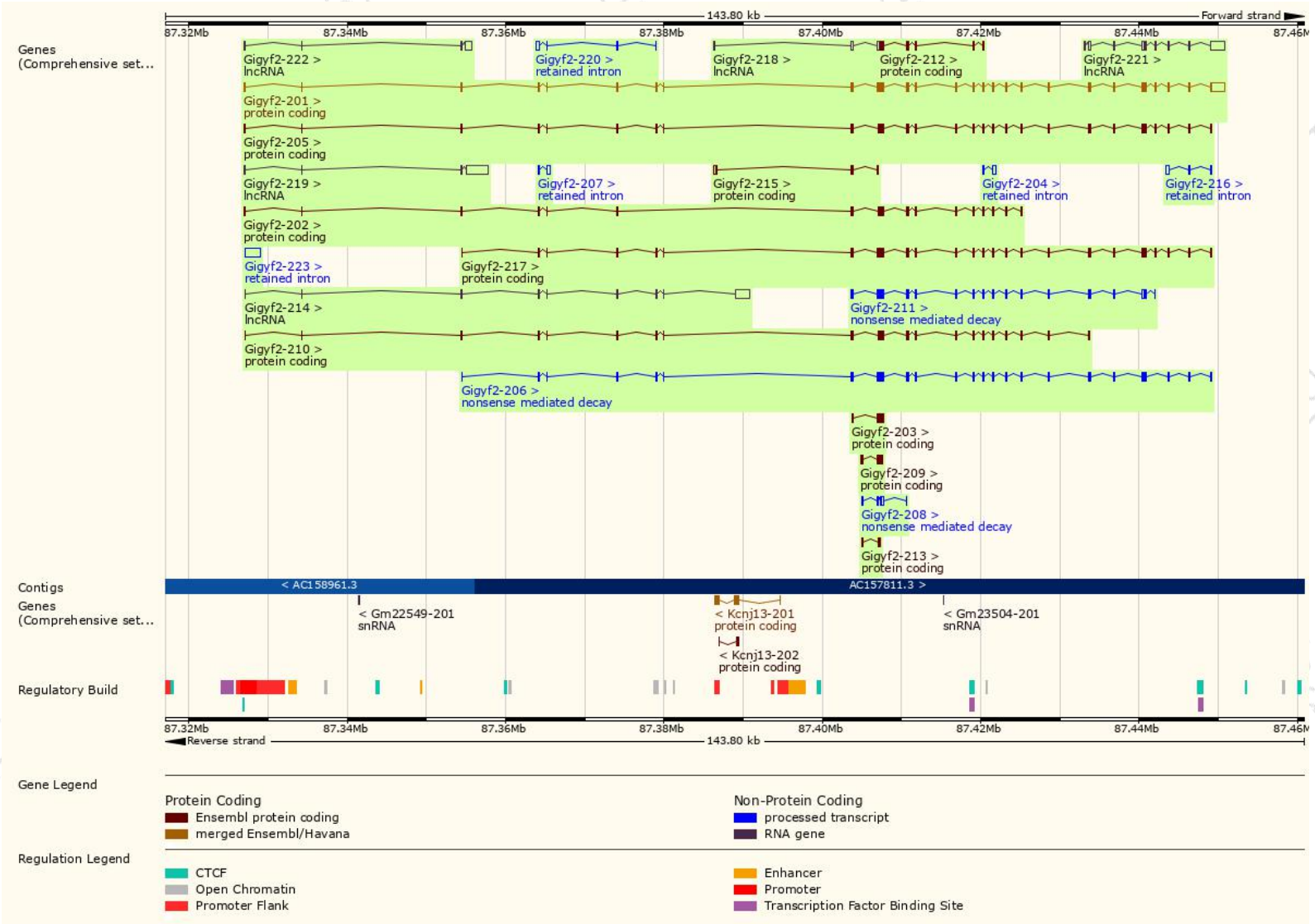
The gene has 23 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gigyf2-201	ENSMUST00000027475.14	5724	1291aa	Protein coding	CCDS15133	Q6Y7W8	TSL:1 GENCODE basic APPRIS P3
Gigyf2-202	ENSMUST00000164992.8	2330	721aa	Protein coding	-	E9Q2M5	CDS 3' incomplete TSL:1
Gigyf2-203	ENSMUST00000172736.7	666	222aa	Protein coding	-	G3UZS9	CDS 5' and 3' incomplete TSL:3
Gigyf2-204	ENSMUST00000172776.1	558	No protein	Retained intron	-	-	TSL:3
Gigyf2-205	ENSMUST00000172794.7	4029	1285aa	Protein coding	CCDS56636	G3UYG6	TSL:5 GENCODE basic APPRIS ALT2
Gigyf2-206	ENSMUST00000172964.7	3721	1122aa	Nonsense mediated decay	-	G3UWR2	TSL:5
Gigyf2-207	ENSMUST00000172976.1	545	No protein	Retained intron	-	-	TSL:2
Gigyf2-208	ENSMUST00000173148.1	566	42aa	Nonsense mediated decay	-	G3UZM3	TSL:5
Gigyf2-209	ENSMUST00000173152.1	618	172aa	Protein coding	-	G3UYH4	CDS 3' incomplete TSL:5
Gigyf2-210	ENSMUST00000173173.7	2765	877aa	Protein coding	-	G3UYR9	CDS 3' incomplete TSL:1
Gigyf2-211	ENSMUST00000173235.7	2826	787aa	Nonsense mediated decay	-	G3UZX7	CDS 5' incomplete TSL:5
Gigyf2-212	ENSMUST00000173636.1	773	258aa	Protein coding	-	G3UZW5	CDS 5' and 3' incomplete TSL:5
Gigyf2-213	ENSMUST00000173663.1	386	110aa	Protein coding	-	G3UWT6	CDS 3' incomplete TSL:3
Gigyf2-214	ENSMUST00000173850.7	2520	No protein	lncRNA	-	-	TSL:5
Gigyf2-215	ENSMUST00000174334.7	533	84aa	Protein coding	-	G3UXF2	CDS 3' incomplete TSL:5
Gigyf2-216	ENSMUST00000174482.1	778	No protein	Retained intron	-	-	TSL:2
Gigyf2-217	ENSMUST00000174501.7	3876	1291aa	Protein coding	CCDS15133	Q6Y7W8	TSL:5 GENCODE basic APPRIS P3
Gigyf2-218	ENSMUST00000174535.1	586	No protein	lncRNA	-	-	TSL:5
Gigyf2-219	ENSMUST00000174583.7	3015	No protein	lncRNA	-	-	TSL:1
Gigyf2-220	ENSMUST00000174605.1	674	No protein	Retained intron	-	-	TSL:5
Gigyf2-221	ENSMUST00000174671.7	3074	No protein	lncRNA	-	-	TSL:1
Gigyf2-222	ENSMUST00000174846.7	995	No protein	lncRNA	-	-	TSL:1
Gigyf2-223	ENSMUST00000187038.1	1962	No protein	Retained intron	-	-	TSL:NA

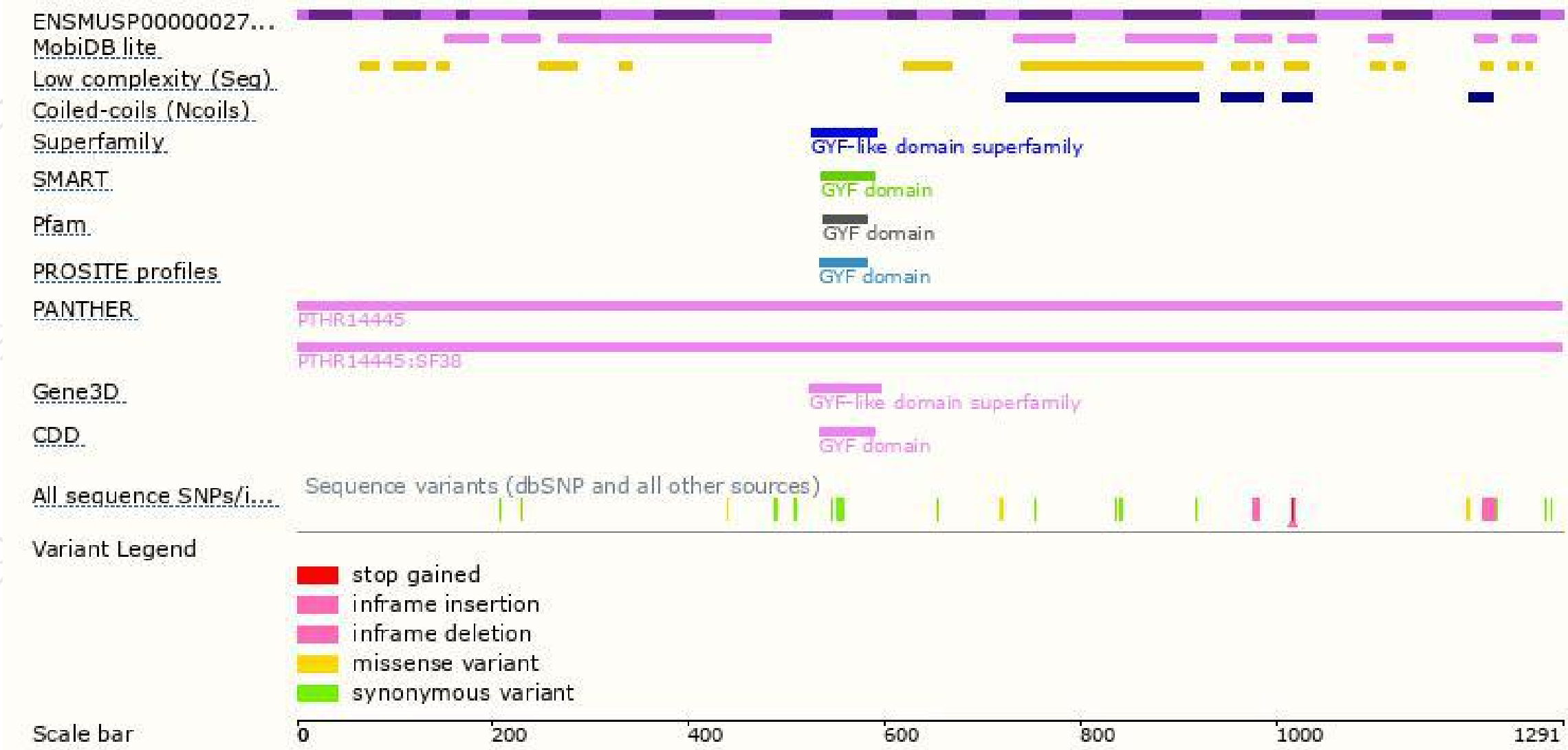
The strategy is based on the design of *Gigyf2-201* transcript, the transcription is shown below:



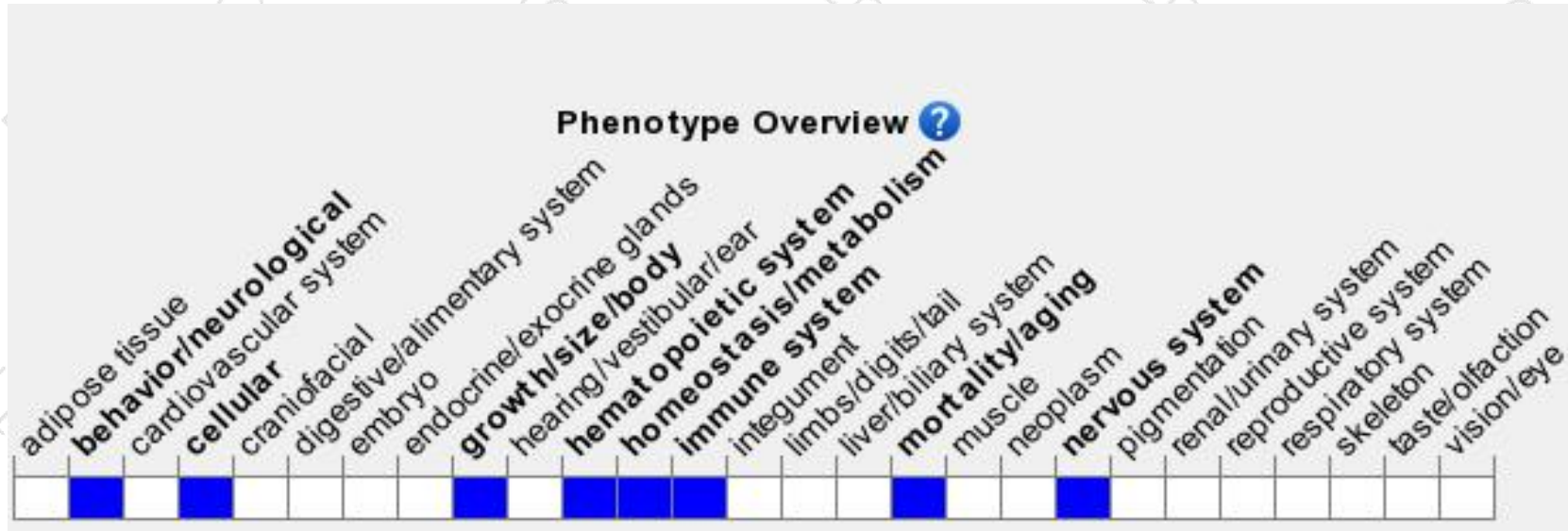
Genomic location distribution



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, Mice homozygous for a knock-out allele exhibit neonatal and postnatal lethality.

Mice heterozygous for a knock-out allele exhibit impaired motor coordination with motor neuron degeneration.

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

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