

Runx1t1 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Runx1t1

Project type

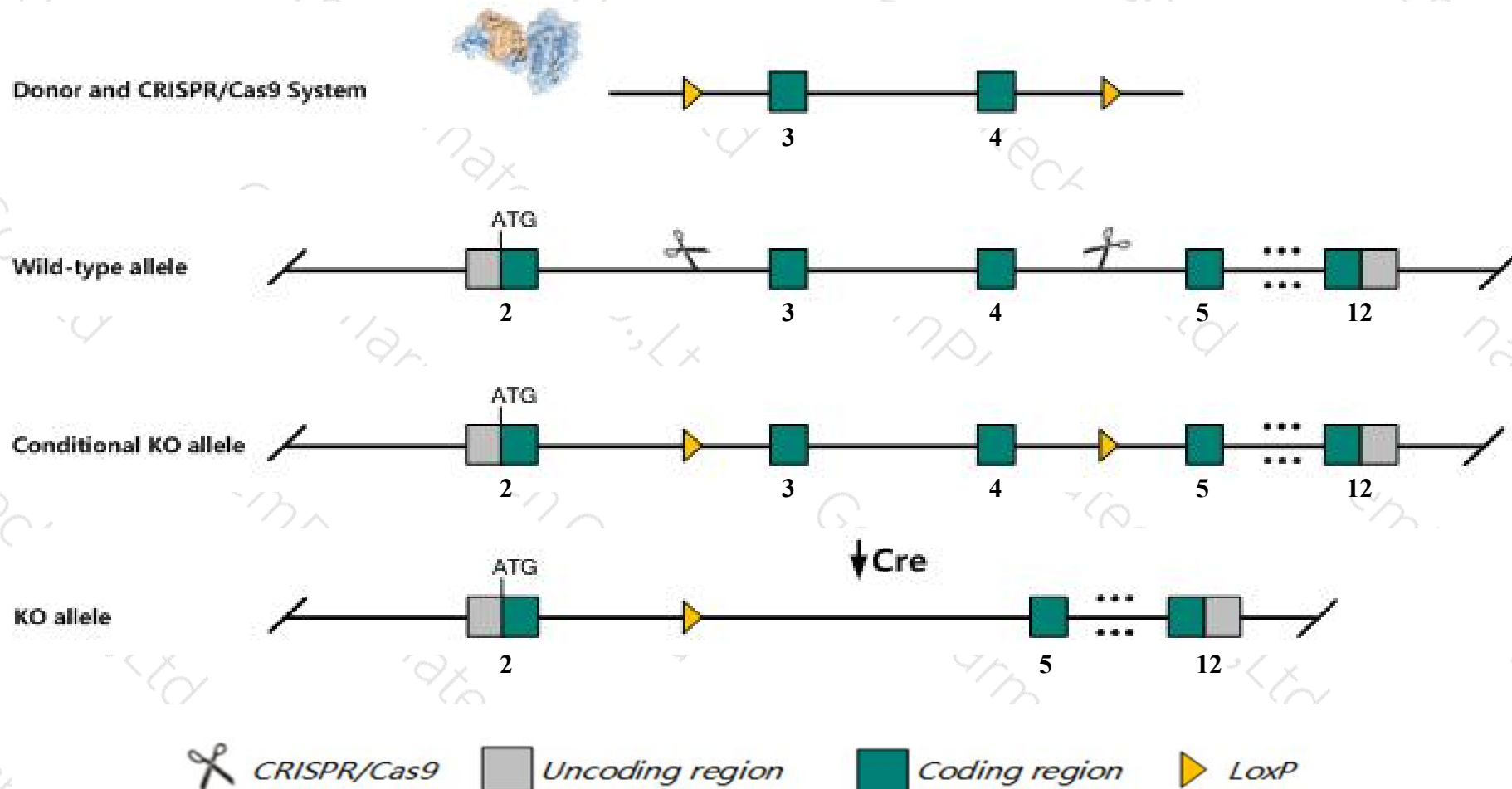
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Runx1t1* gene. The schematic diagram is as follows:



- The *Runx1t1* gene has 6 transcripts. According to the structure of *Runx1t1* gene, exon3-exon4 of *Runx1t1*-204 (ENSMUST00000105566.8) transcript is recommended as the knockout region. The region contains 380bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Runx1t1* 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 disruption of this gene results in increased perinatal lethality and surviving animals show severe growth retardation. The midgut is absent in 25% of mutant animals which could explain increased perinatal mortality. Surviving animals display thinned intestinal walls and dilated lumens.
- The *Runx1tl* gene is located on the Chr4. 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)

Runx1t1 RUNX1 translocation partner 1 [Mus musculus (house mouse)]

Gene ID: 12395, updated on 31-Jan-2019

Summary



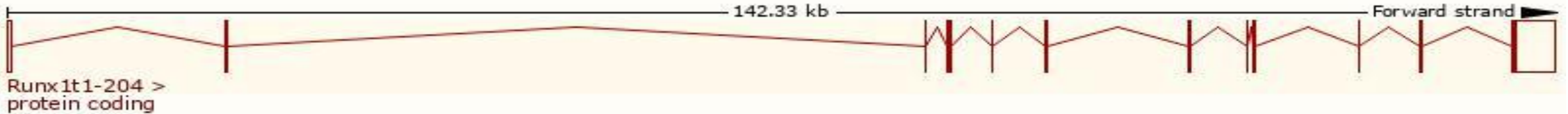
Official Symbol	Runx1t1 provided by MGI
Official Full Name	RUNX1 translocation partner 1 provided by MGI
Primary source	MGI:MGI:104793
See related	Ensembl:ENSMUSG000000006586
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Cbfa2t1h, ETO, MTG8
Expression	Broad expression in whole brain E14.5 (RPKM 6.0), CNS E18 (RPKM 4.8) and 15 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

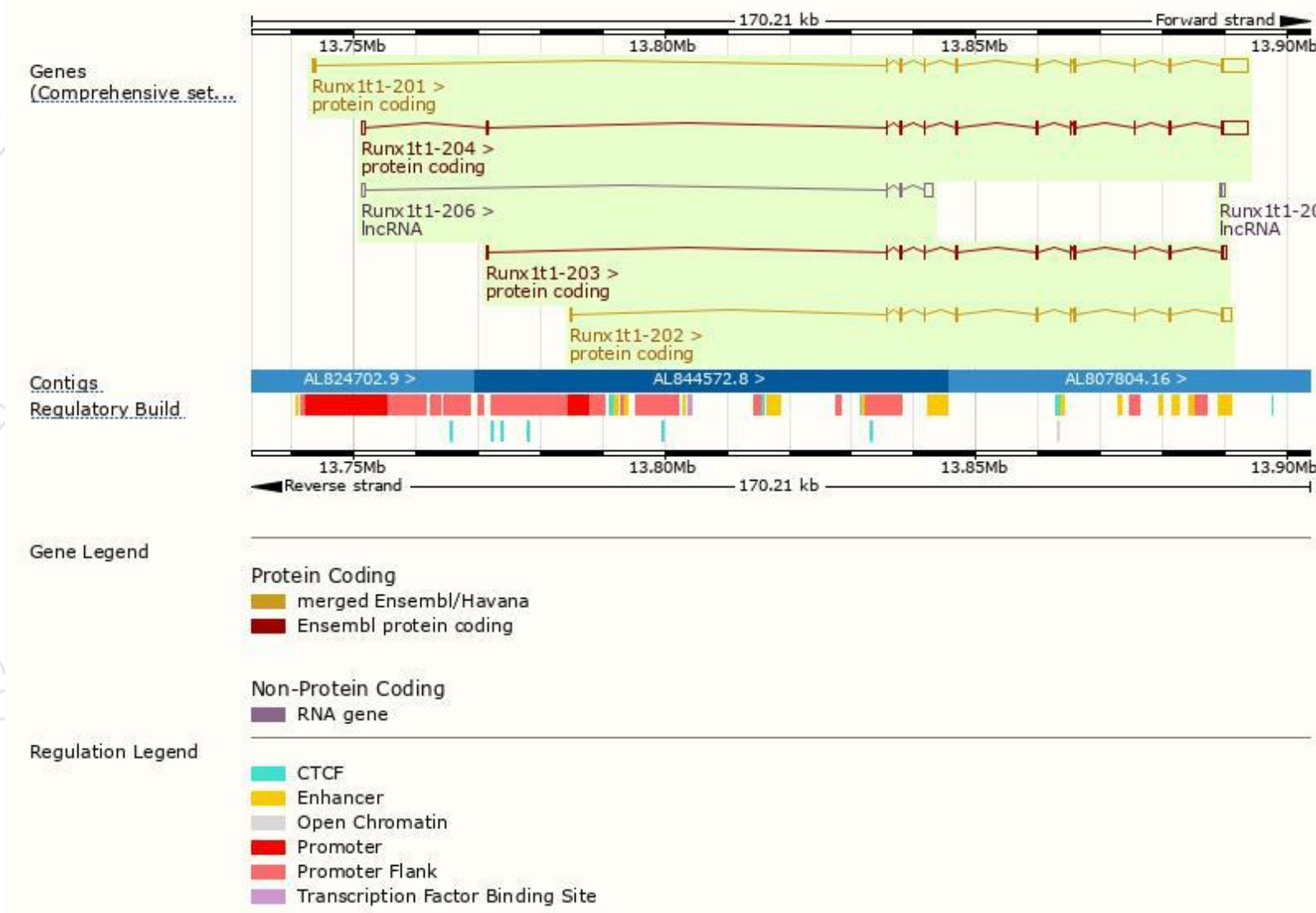
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Runx1t1-204	ENSMUST00000105566.8	6090	604aa	Protein coding	CCDS51125	B1AXH8	TSL:5 GENCODE basic APPRIS ALT2
Runx1t1-201	ENSMUST00000006761.9	5783	584aa	Protein coding	CCDS51124	Q3UQX8	TSL:1 GENCODE basic APPRIS ALT2
Runx1t1-202	ENSMUST00000098256.3	3317	577aa	Protein coding	CCDS17978	B1AXH9 Q61909	TSL:1 GENCODE basic APPRIS P3
Runx1t1-203	ENSMUST00000098257.9	2332	604aa	Protein coding	CCDS51125	B1AXH8	TSL:1 GENCODE basic APPRIS ALT2
Runx1t1-206	ENSMUST00000150583.7	2062	No protein	lncRNA	-	-	TSL:1
Runx1t1-205	ENSMUST00000139736.1	405	No protein	lncRNA	-	-	TSL:3

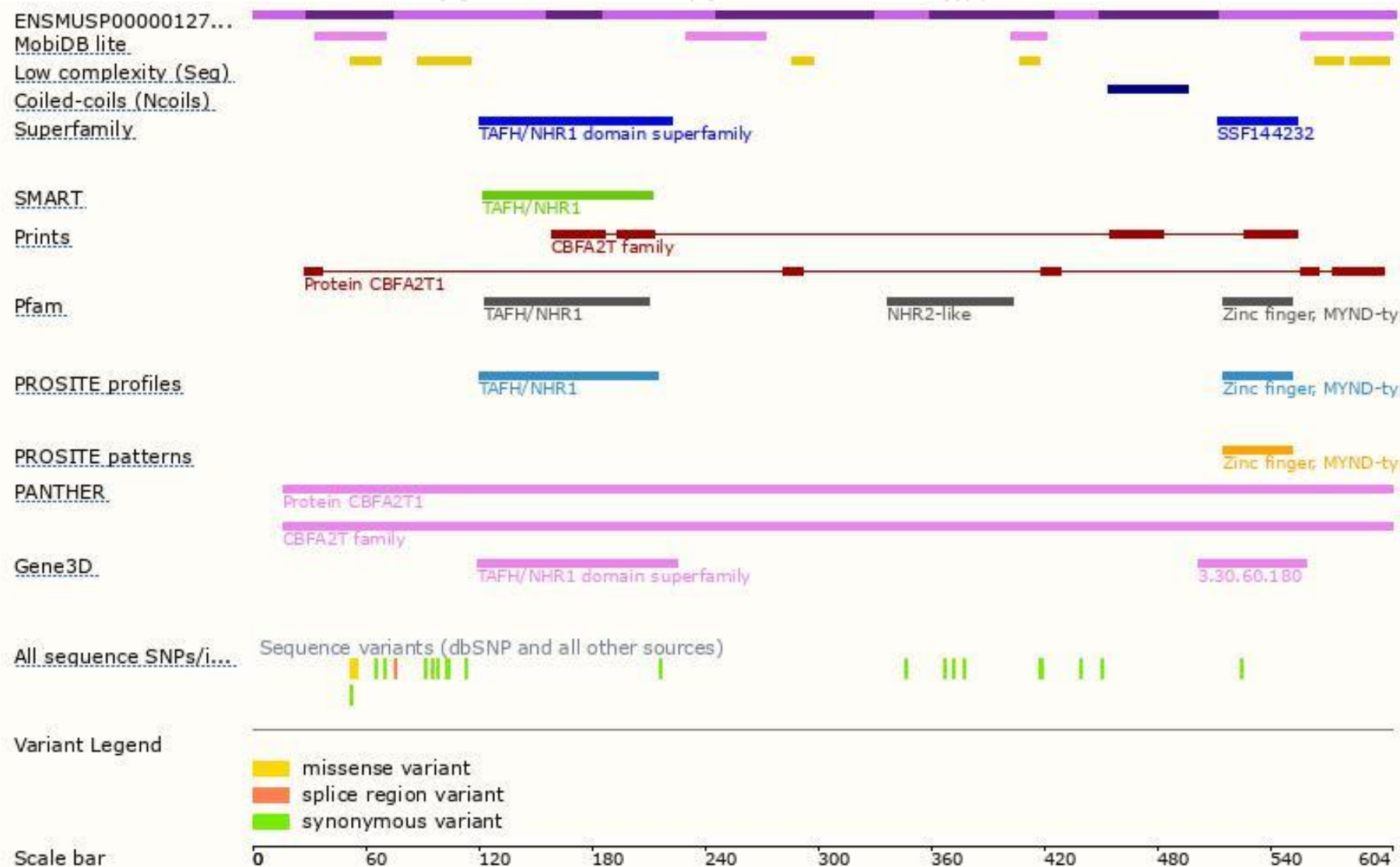
The strategy is based on the design of *Runx1t1-204* transcript,The transcription is shown below



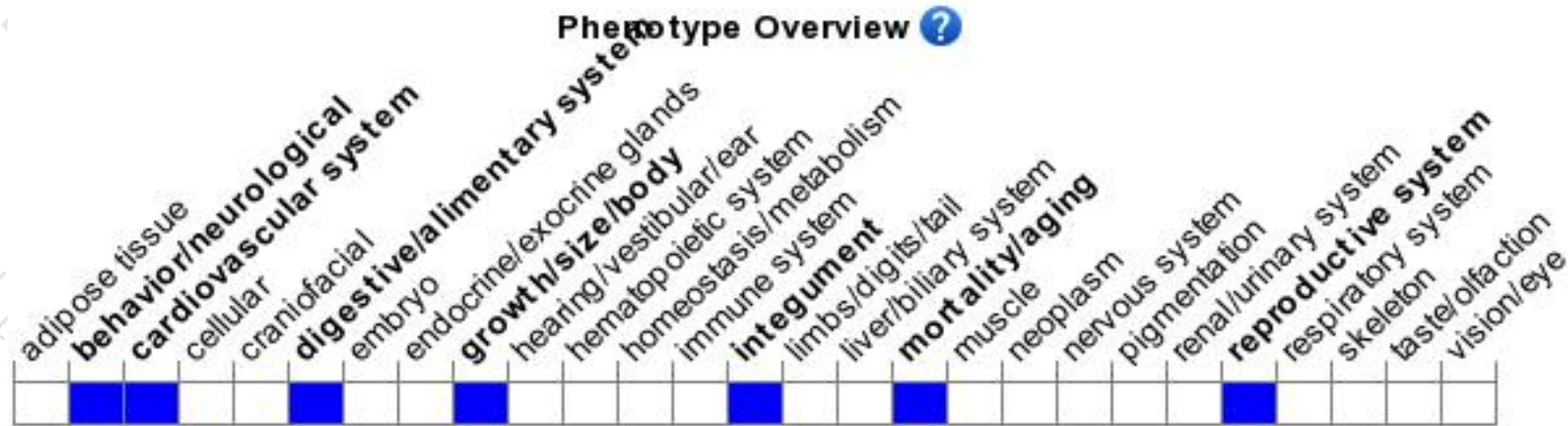
Genomic location distribution



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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