Trps1 Cas9-CKO Strategy

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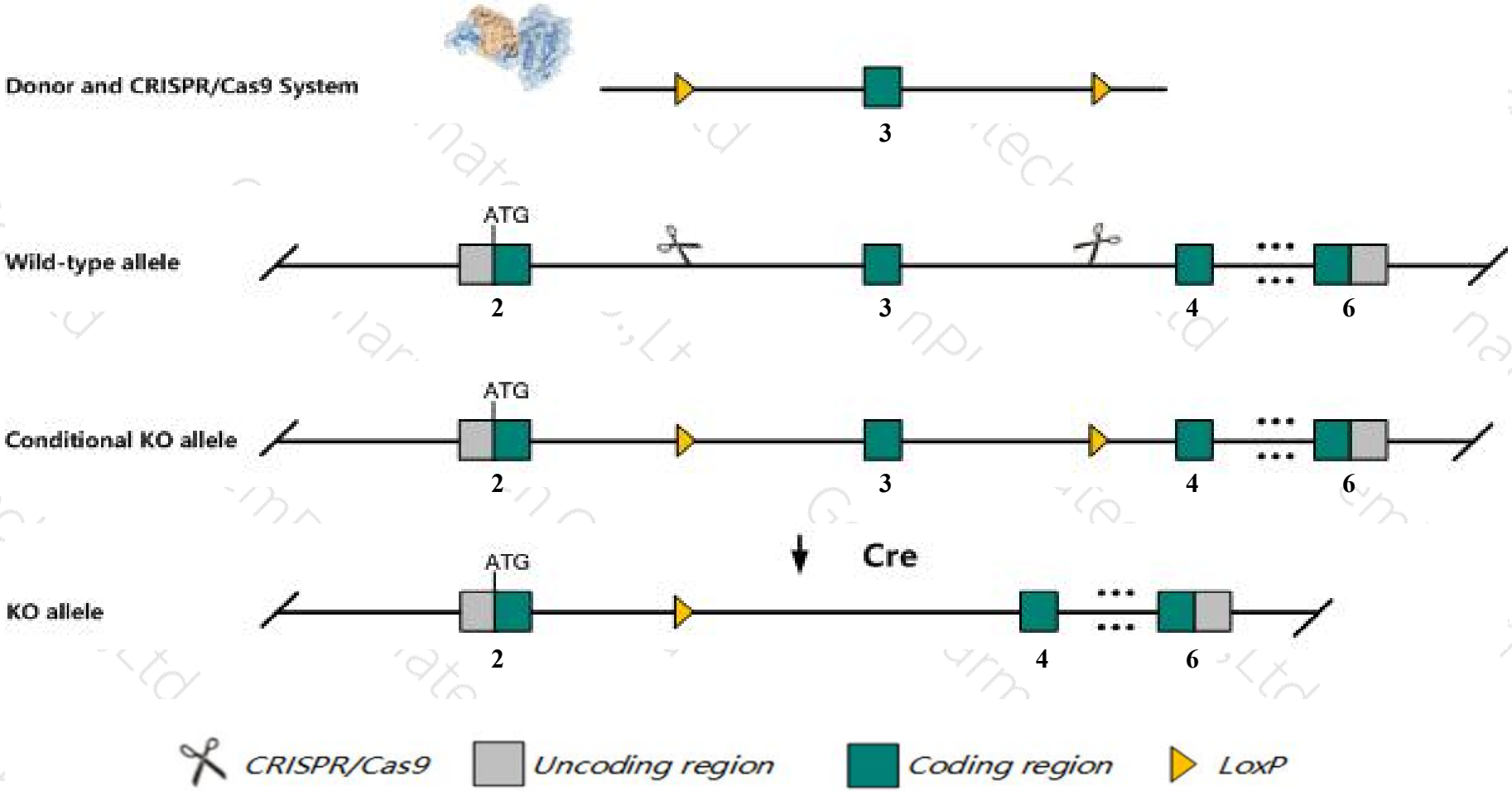
Project Overview

Project Name	***Trps1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Trps1* gene. The schematic diagram is as follows:



Technical routes

- The *Trps1* gene has 8 transcripts. According to the structure of *Trps1* gene, exon3 of *Trps1-204* (ENSMUST00000183757.7) transcript is recommended as the knockout region.The region contains 1130bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Trps1* gene. The brief process is as follows:gRNA was transcribed in vitro, donor was constructed.Cas9, gRNA 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.

Notice

- According to the existing MGI data,Newborn mice homozygous for a knock-out allele exhibit craniofacial and hair anomalies and die of respiratory failure due to thoracic spine and rib defects. Mice homozygous for a reporter allele show additional defects in chondrocyte proliferation and apoptosis as well as reduced nephron formation.

- Transcript *Trps1-208* may not be affected.

- The *Trps1* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

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Trps1 transcriptional repressor GATA binding 1 [*Mus musculus* (house mouse)]

Gene ID: 83925, updated on 11-Sep-2019

Summary

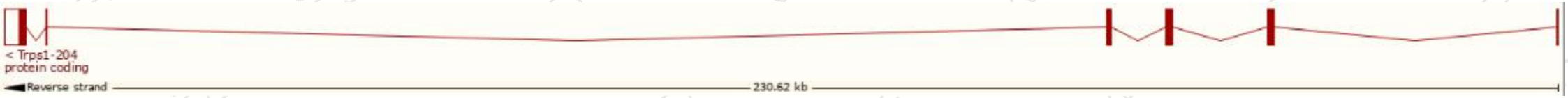
Official Symbol	Trps1 provided by MGI
Official Full Name	transcriptional repressor GATA binding 1 provided by MGI
Primary source	MGI:MGI:1927616
See related	Ensembl:ENSMUSG00000038679
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI115454; AI447310; D15Ertd586e
Expression	Broad expression in limb E14.5 (RPKM 5.4), bladder adult (RPKM 4.0) and 17 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

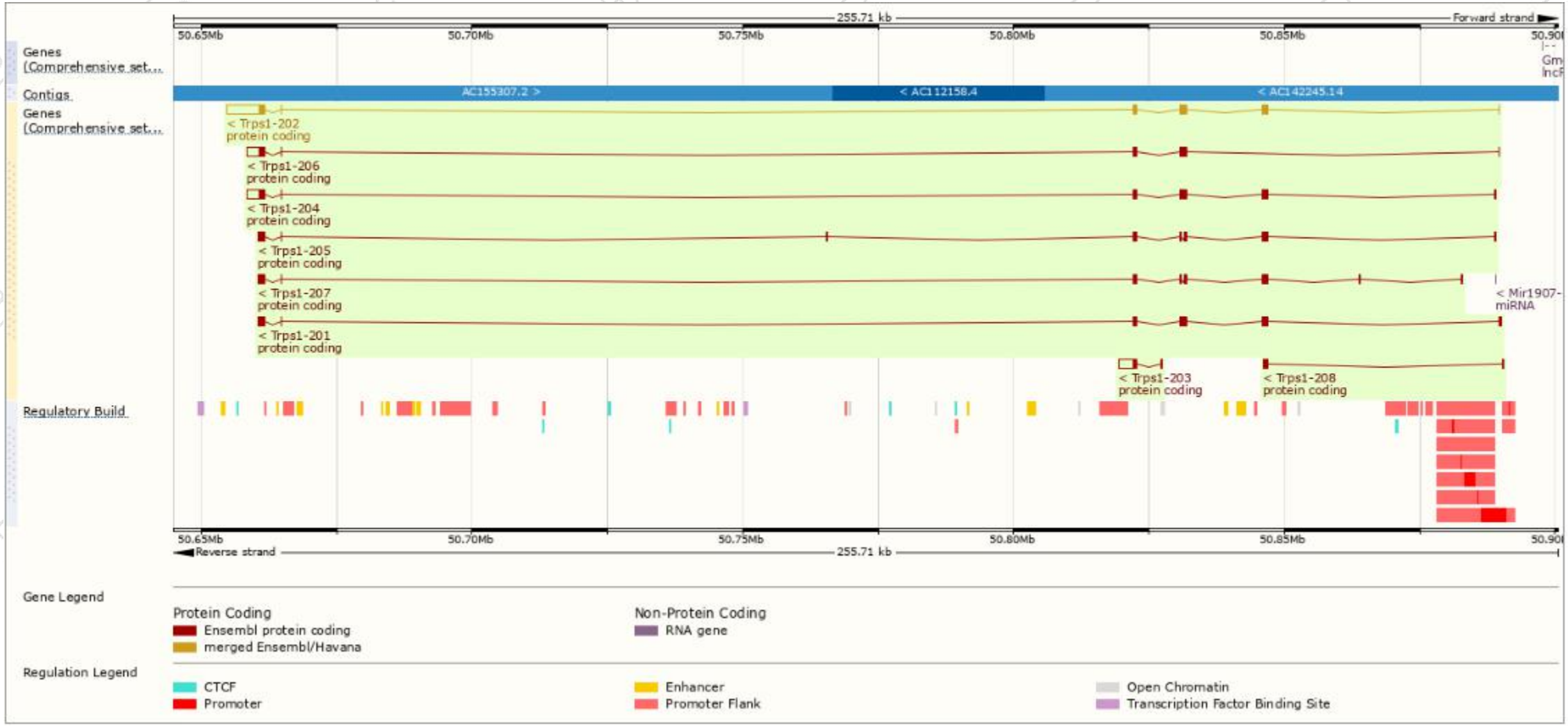
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Trps1-202	ENSMUST00000165201.8	9859	1281aa	Protein coding	CCDS27460	G3UW90	TSL:1 GENCODE basic APPRIS P3
Trps1-204	ENSMUST00000183757.7	6202	1285aa	Protein coding	CCDS79370	V9GX74	TSL:1 GENCODE basic APPRIS ALT2
Trps1-201	ENSMUST00000077935.5	4436	1281aa	Protein coding	CCDS27460	G3UW90	TSL:1 GENCODE basic APPRIS P3
Trps1-205	ENSMUST00000183997.7	3627	1096aa	Protein coding	CCDS79371	V9GXE9	TSL:1 GENCODE basic
Trps1-206	ENSMUST00000184458.7	5293	994aa	Protein coding	-	V9GXA5	TSL:1 GENCODE basic
Trps1-207	ENSMUST00000184885.7	3492	1035aa	Protein coding	-	Q80V18	TSL:1 GENCODE basic
Trps1-203	ENSMUST00000183421.1	3446	229aa	Protein coding	-	Q8BZ62	TSL:1 GENCODE basic
Trps1-208	ENSMUST00000185183.1	887	255aa	Protein coding	-	V9GX39	CDS 3' incomplete TSL:2

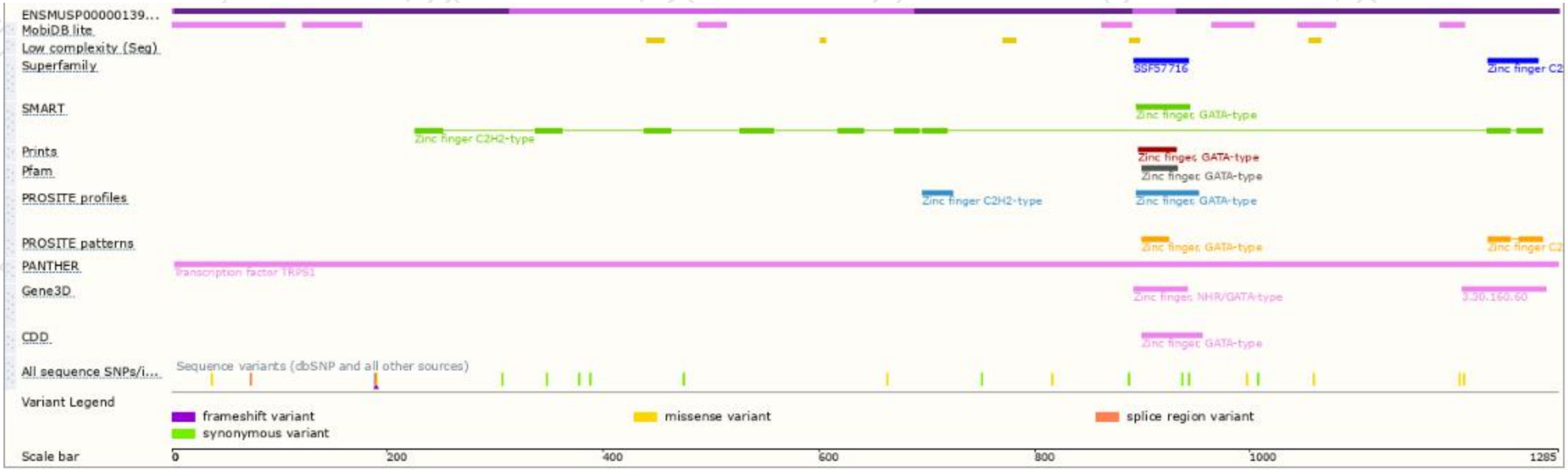
The strategy is based on the design of *Trps1-204* transcript,The transcription is shown below



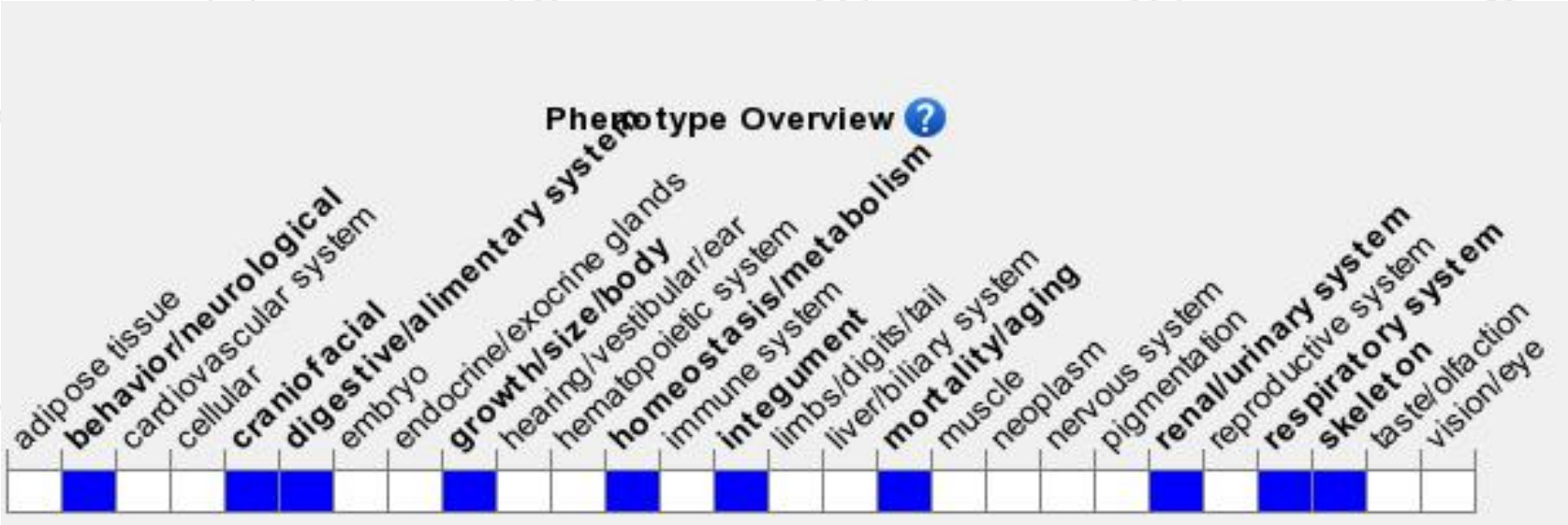
Genomic location distribution



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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