Trpm7 Cas9-KO Strategy

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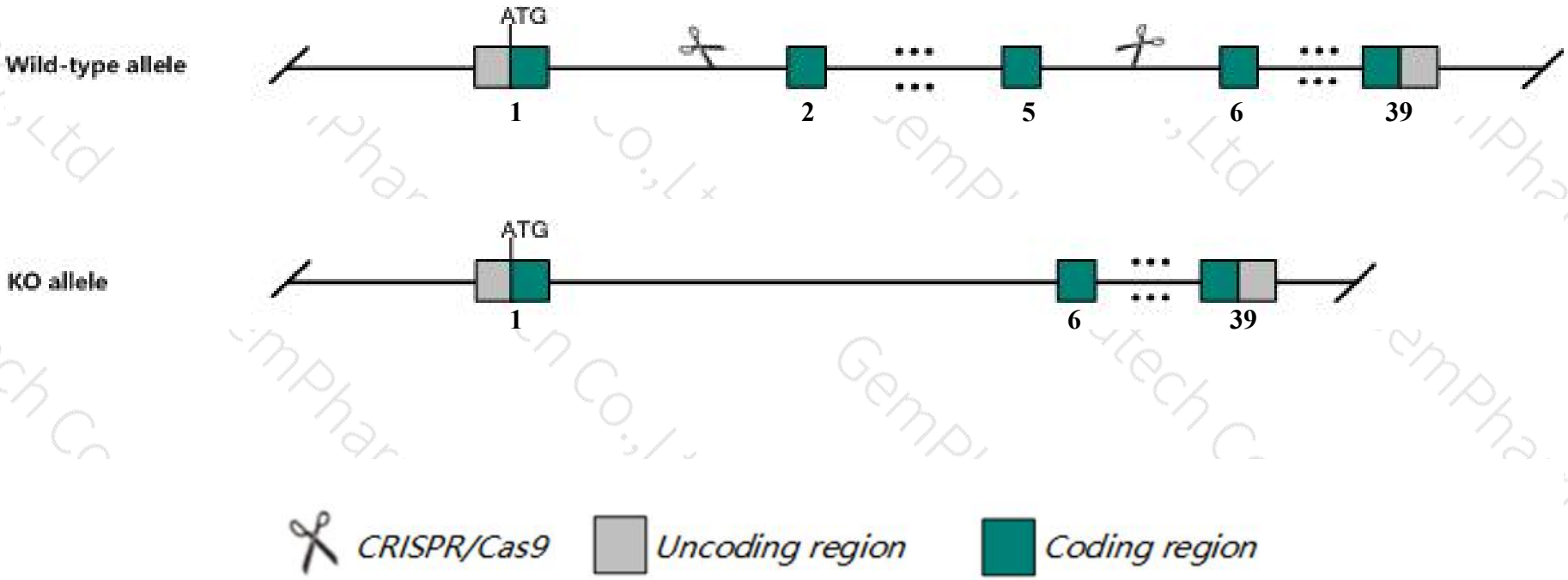
Project Overview

Project Name	***Trpm7***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Trpm7* gene. The schematic diagram is as follows:



Technical routes

➢ The *Trpm7* gene has 11 transcripts. According to the structure of *Trpm7* gene, exon2-exon5 of *Trpm7-202* (ENSMUST00000103224.9) transcript is recommended as the knockout region.The region contains 532bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Trpm7* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Mice homozygous for a null allele display embryonic lehality. Mice with conditional deletion in developing thymocytes display a block in thymopoiesis. Mice homozygous for a kinase deleted allele exhibit prenatal lethality. Mice heterozygous for this allele exhibit altered magnesium homeostasis.

- The *Trpm7* gene is located on the Chr2. 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）

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Trpm7 transient receptor potential cation channel, subfamily M, member 7 [Mus musculus (house mouse)]

Gene ID: 58800, updated on 2-Apr-2019

Summary

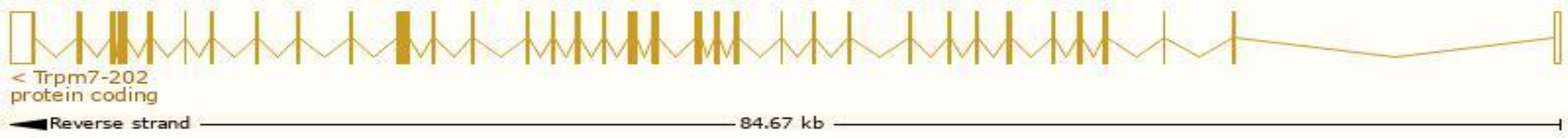
Official Symbol	Trpm7 provided by MGI
Official Full Name	transient receptor potential cation channel, subfamily M, member 7 provided by MGI
Primary source	MGI:MGI:1929996
See related	Ensembl:ENSMUSG00000027365
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2310022G15Rik, 4833414K03Rik, 5033407O22Rik, CHAK, CHAK1, LTrpC-7, Ltpr7, Ltrpc7, TRPPLIK
Expression	Ubiquitous expression in limb E14.5 (RPKM 10.3), CNS E11.5 (RPKM 10.0) and 24 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

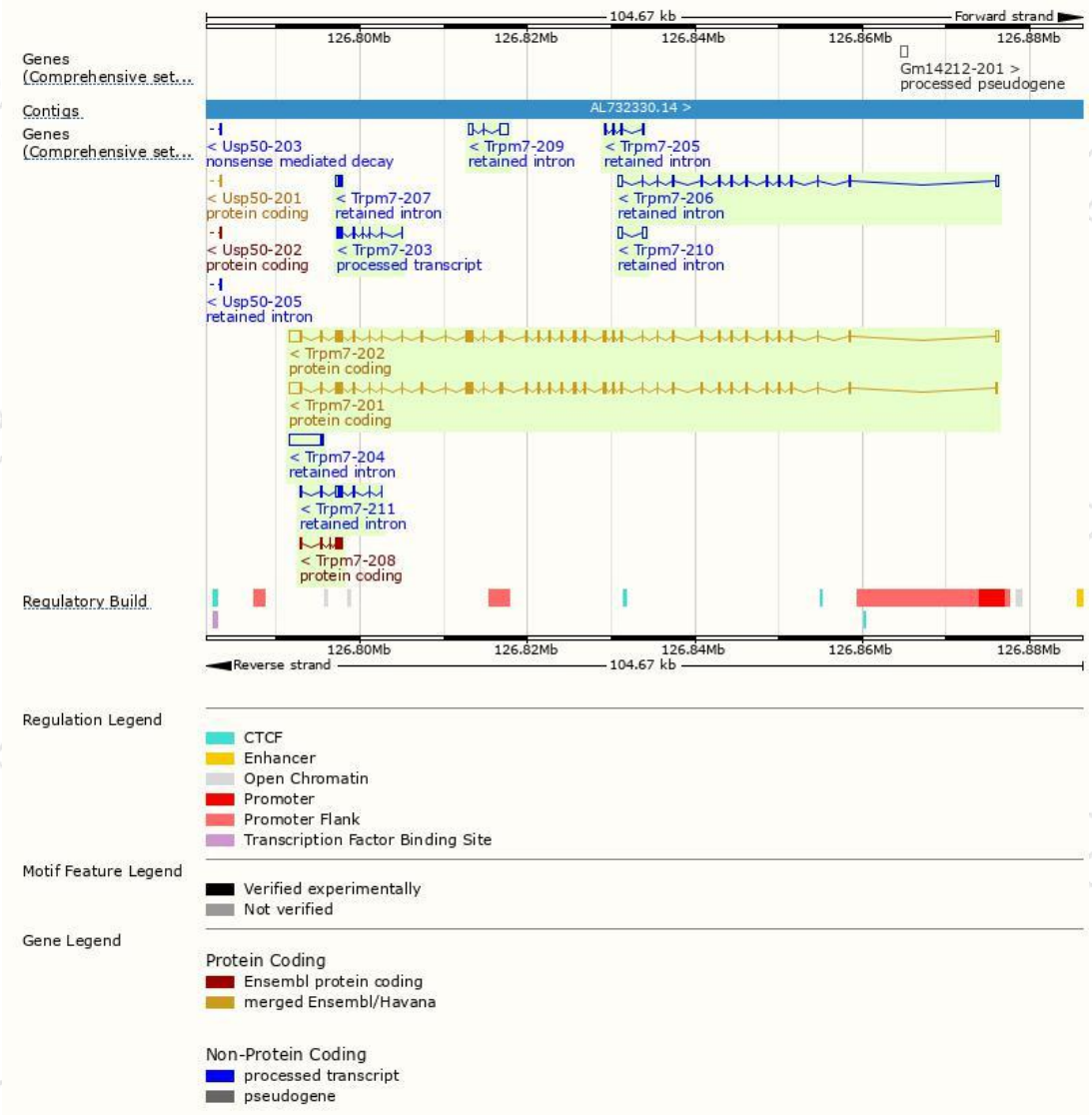
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Trpm7-202	ENSMUST00000103224.9	7107	1863aa	Protein coding	CCDS16689	Q923J1	TSL:1 GENCODE basic APPRIS P3
Trpm7-201	ENSMUST00000028843.11	6985	1862aa	Protein coding	CCDS50700	A2AI57	TSL:1 GENCODE basic APPRIS ALT1
Trpm7-208	ENSMUST00000136964.1	803	268aa	Protein coding	-	F6QKC0	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:3
Trpm7-203	ENSMUST00000125327.1	671	No protein	Processed transcript	-	-	TSL:5
Trpm7-204	ENSMUST00000127277.1	3849	No protein	Retained intron	-	-	TSL:1
Trpm7-206	ENSMUST00000134408.1	2201	No protein	Retained intron	-	-	TSL:1
Trpm7-209	ENSMUST00000142334.1	1444	No protein	Retained intron	-	-	TSL:1
Trpm7-211	ENSMUST00000155675.7	1123	No protein	Retained intron	-	-	TSL:5
Trpm7-210	ENSMUST00000152615.1	1001	No protein	Retained intron	-	-	TSL:1
Trpm7-207	ENSMUST00000135733.7	574	No protein	Retained intron	-	-	TSL:2
Trpm7-205	ENSMUST00000132003.1	467	No protein	Retained intron	-	-	TSL:2

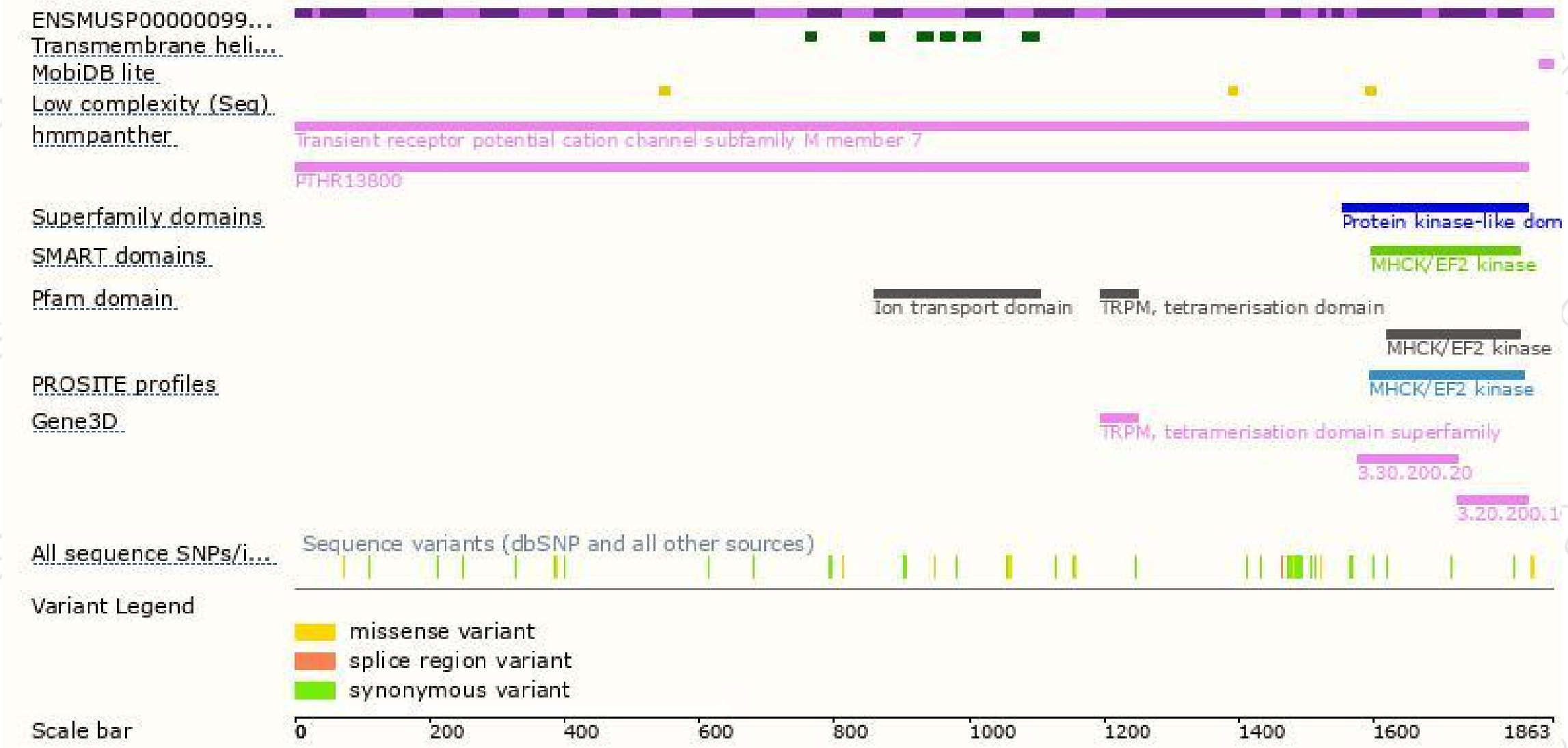
The strategy is based on the design of *Trpm7-202* transcript,The transcription is shown below



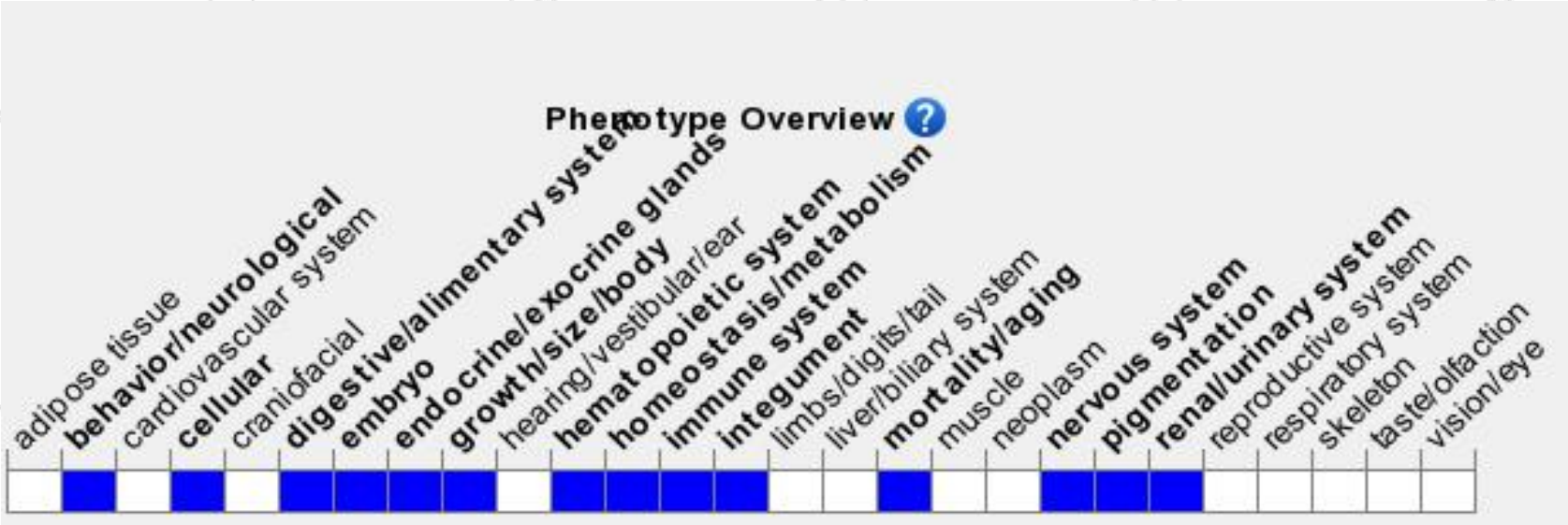
Genomic location distribution



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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