Chn1 Cas9-KO Strategy

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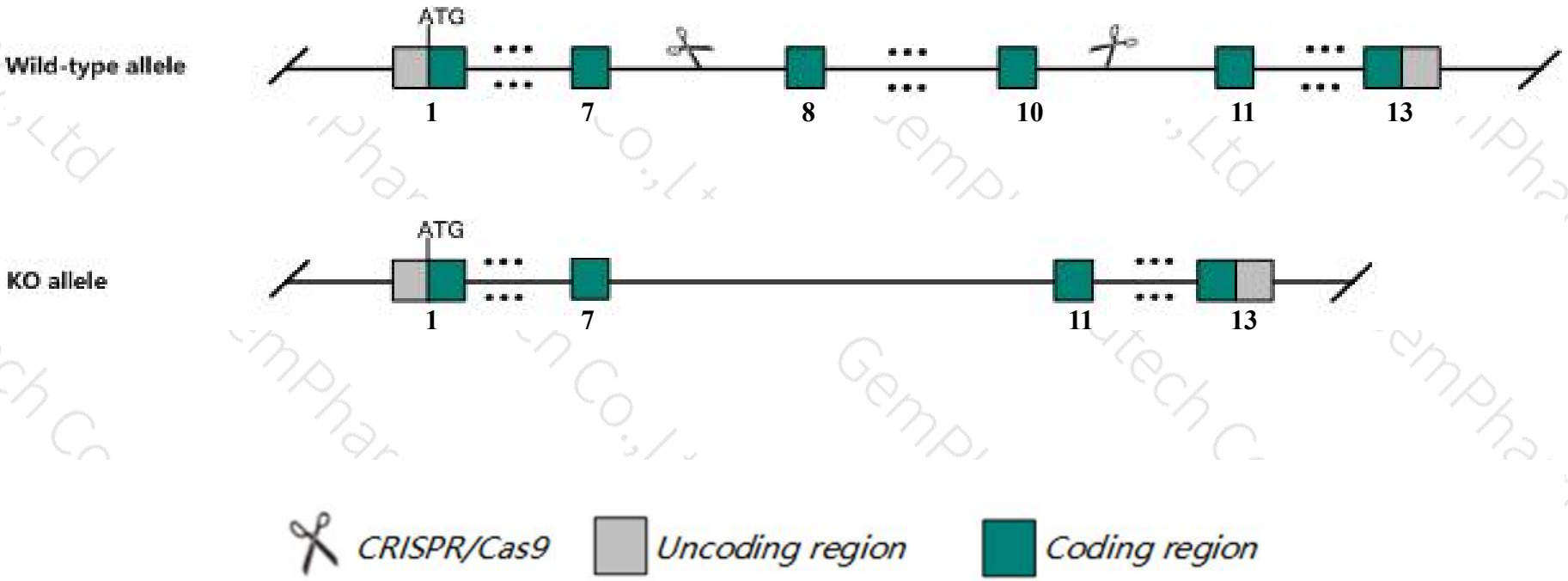
Project Overview

Project Name	***Chn1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Chn1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Chn1* gene has 15 transcripts. According to the structure of *Chn1* gene, exon8-exon10 of *Chn1-203* (ENSMUST00000112024.9) transcript is recommended as the knockout region.The region contains 337bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Chn1* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,mice homologous for a null allele exhibit transient postnatal size reduction, abnormal gait and abnormal innervation of the spinal cord. Part of null homozygous show preweaning lethality.

- Transcript *Chn1-205* may not be affected.

- The *Chn1* 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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Chn1 chimerin 1 [*Mus musculus* (house mouse)]

Gene ID: 108699, updated on 19-Nov-2019

Summary

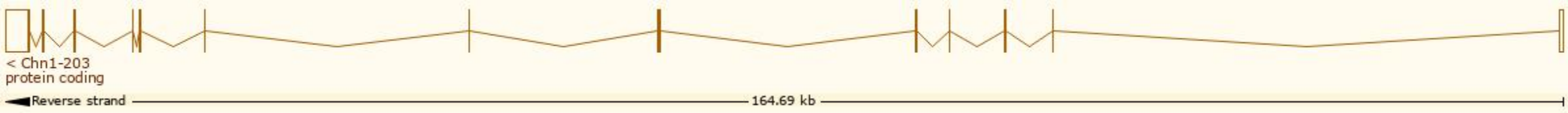
Official Symbol	Chn1 provided by MGI
Official Full Name	chimerin 1 provided by MGI
Primary source	MGI:MGI:1915674
See related	Ensembl:ENSMUSG00000056486
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	ARHGAP2; AI413815; 0610007I19Rik; 0710001E19Rik; 1700112L09Rik; 2900046J01Rik
Expression	Biased expression in cortex adult (RPKM 122.5), frontal lobe adult (RPKM 81.5) and 6 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

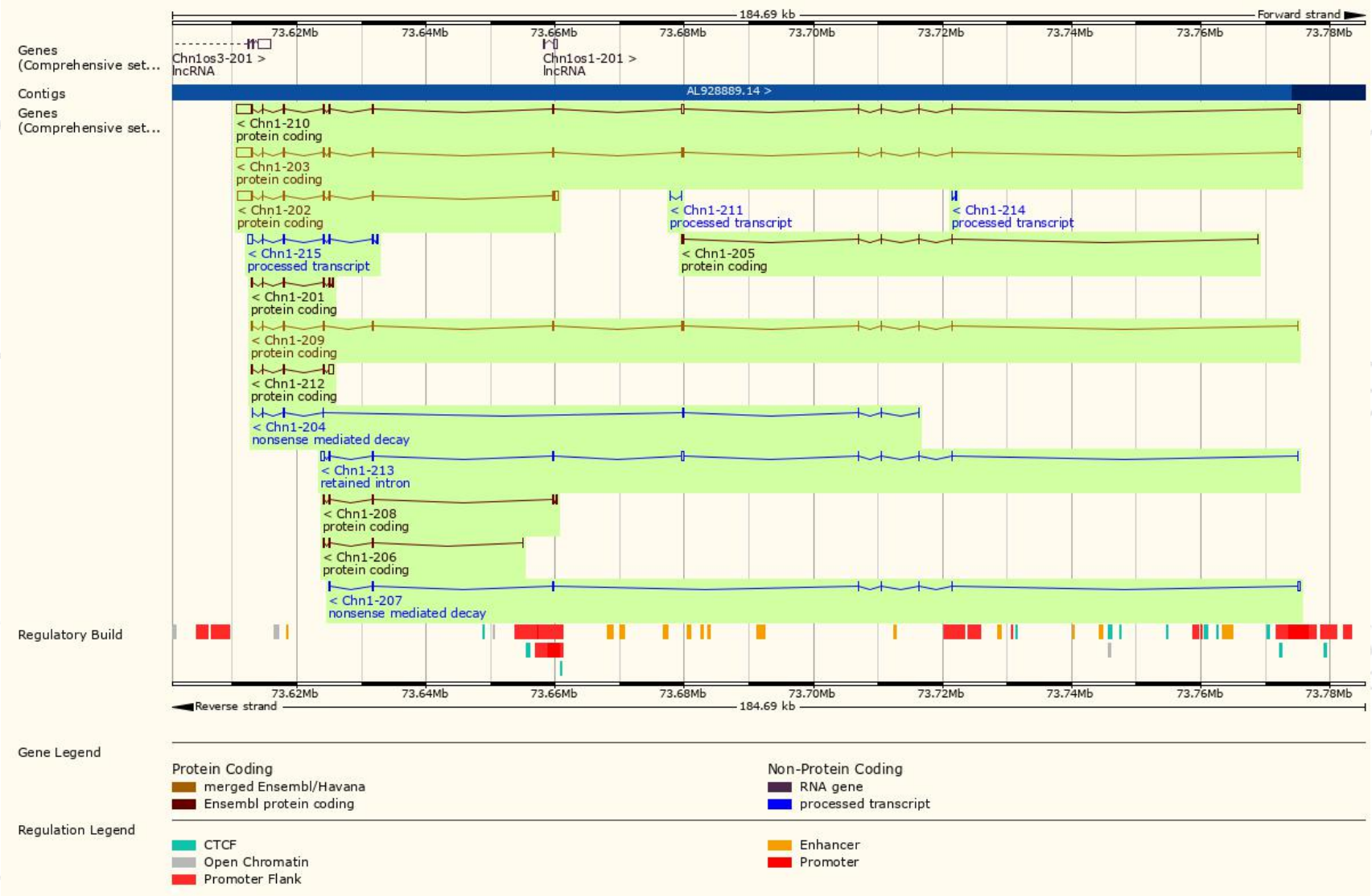
The gene has 15 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Chn1-203	ENSMUST00000112024.9	4050	459aa	Protein coding	CCDS50608	Q91V57	TSL:1 GENCODE basic APPRIS P1
Chn1-210	ENSMUST00000180045.7	4050	210aa	Protein coding	CCDS38145	A7VK14 Q91V57	TSL:1 GENCODE basic
Chn1-202	ENSMUST00000102677.10	3760	334aa	Protein coding	CCDS16133	Q91V57	TSL:1 GENCODE basic
Chn1-212	ENSMUST00000229731.1	1403	210aa	Protein coding	CCDS38145	A7VK14 Q91V57	GENCODE basic
Chn1-209	ENSMUST00000166199.8	1324	401aa	Protein coding	CCDS50607	A7VK13	TSL:1 GENCODE basic
Chn1-201	ENSMUST00000070579.6	1023	210aa	Protein coding	CCDS38145	A7VK14 Q91V57	TSL:1 GENCODE basic
Chn1-208	ENSMUST00000154258.7	712	95aa	Protein coding	-	B2FDI0	CDS 3' incomplete TSL:5
Chn1-205	ENSMUST00000135904.1	631	128aa	Protein coding	-	B2FDI2	CDS 3' incomplete TSL:2
Chn1-206	ENSMUST00000136953.1	413	81aa	Protein coding	-	B2FDI1	CDS 3' incomplete TSL:3
Chn1-207	ENSMUST00000139252.1	881	87aa	Nonsense mediated decay	-	D6RCX8	TSL:3
Chn1-204	ENSMUST00000124450.1	643	29aa	Nonsense mediated decay	-	F7C3N6	CDS 5' incomplete TSL:3
Chn1-215	ENSMUST00000231013.1	1544	No protein	Processed transcript	-	-	-
Chn1-214	ENSMUST00000230959.1	205	No protein	Processed transcript	-	-	-
Chn1-211	ENSMUST00000229312.1	20	No protein	Processed transcript	-	-	-
Chn1-213	ENSMUST00000229987.1	1431	No protein	Retained intron	-	-	-

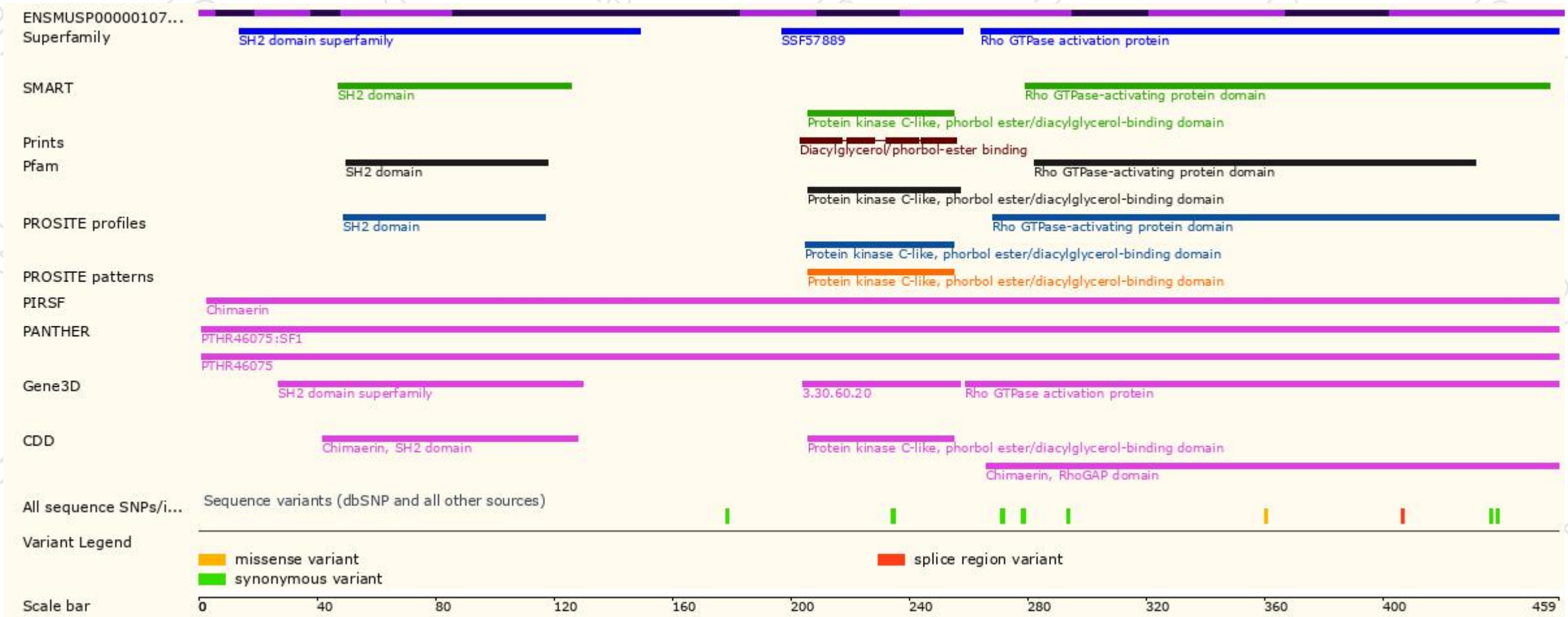
The strategy is based on the design of *Chn1-203* transcript, the transcription is shown below:



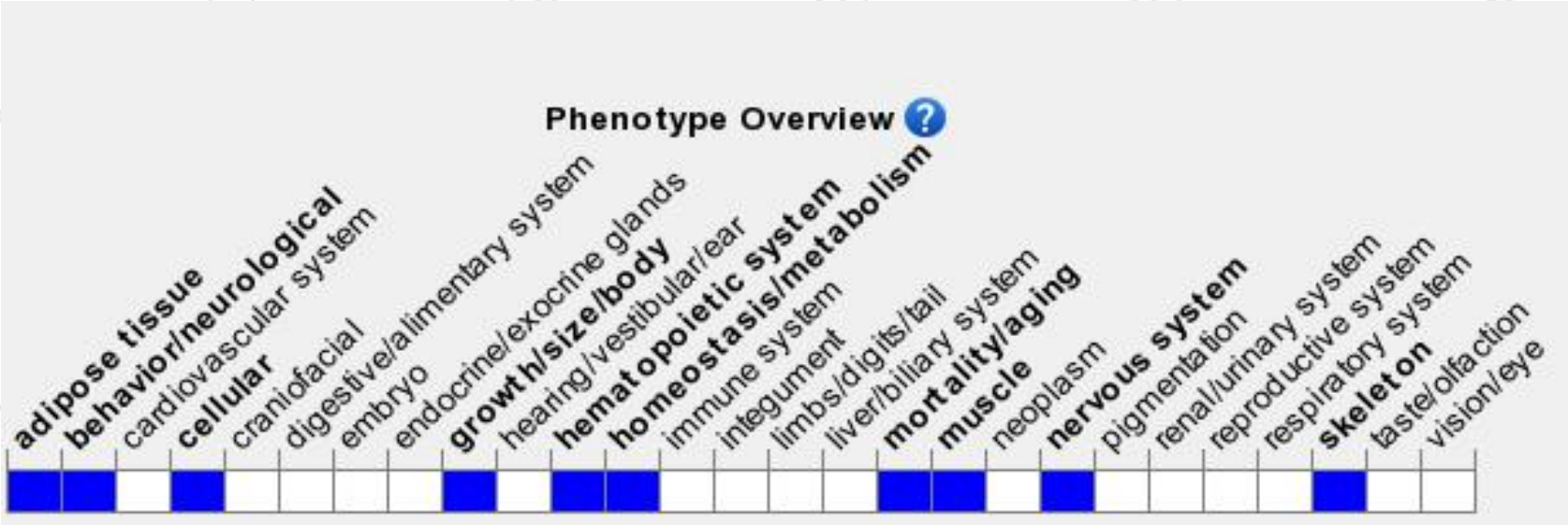
Genomic location distribution



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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