Arhgap32 Cas9-CKO Strategy

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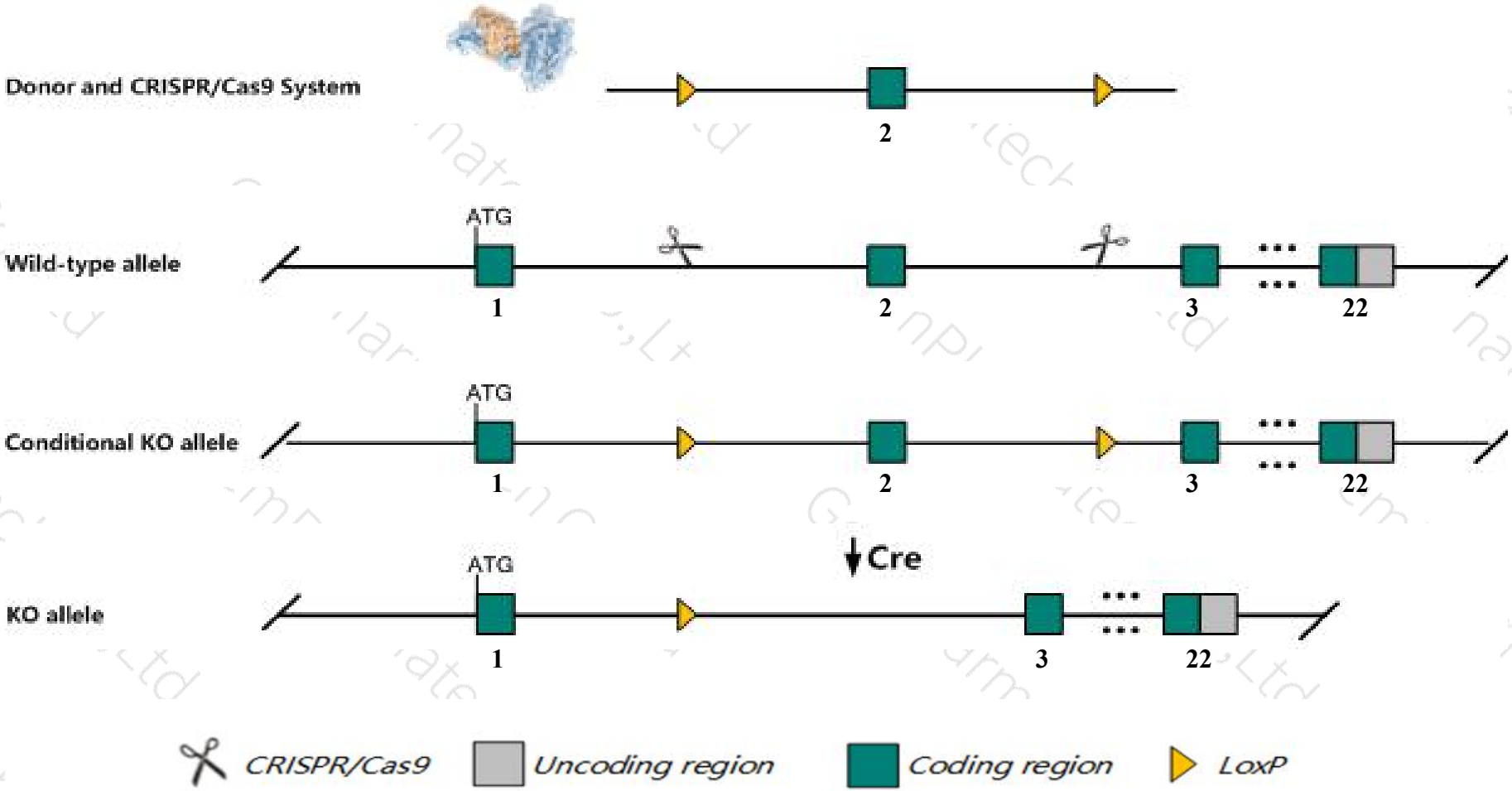
Project Overview

Project Name	***Arhgap32***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Arhgap32* gene. The schematic diagram is as follows:



Technical routes

- The *Arhgap32* gene has 7 transcripts. According to the structure of *Arhgap32* gene, exon2 of *Arhgap32-203* (ENSMUST00000174641.7) transcript is recommended as the knockout region.The region contains 109bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Arhgap32* 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.

Notice

- According to the existing MGI data,Mice homozygous for a null mutation are fertile but display abnormal neurite growth.
- This strategy has no effect on *Arhgap32*-201,*Arhgap32*-206,*Arhgap32*-207.
- The *Arhgap32* gene is located on the Chr9. 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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Arhgap32 Rho GTPase activating protein 32 [*Mus musculus* (house mouse)]

Gene ID: 330914, updated on 12-Aug-2019

Summary

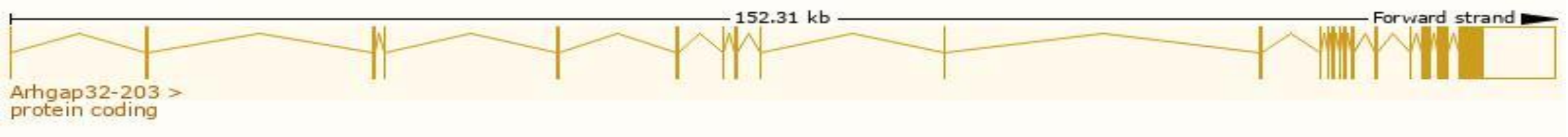
Official Symbol	Arhgap32 provided by MGI
Official Full Name	Rho GTPase activating protein 32 provided by MGI
Primary source	MGI:MGI:2450166
See related	Ensembl:ENSMUSG00000041444
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Grit; Rics; Gc-gap; Px-rics; p250Gap; mKIAA0712; p200Rhogap; 3426406O18Rik
Annotation information	Note: There are conflicting opinions about the protein-coding potential of this locus. [17 Jun 2011]
Expression	Broad expression in cortex adult (RPKM 9.5), frontal lobe adult (RPKM 9.3) and 22 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

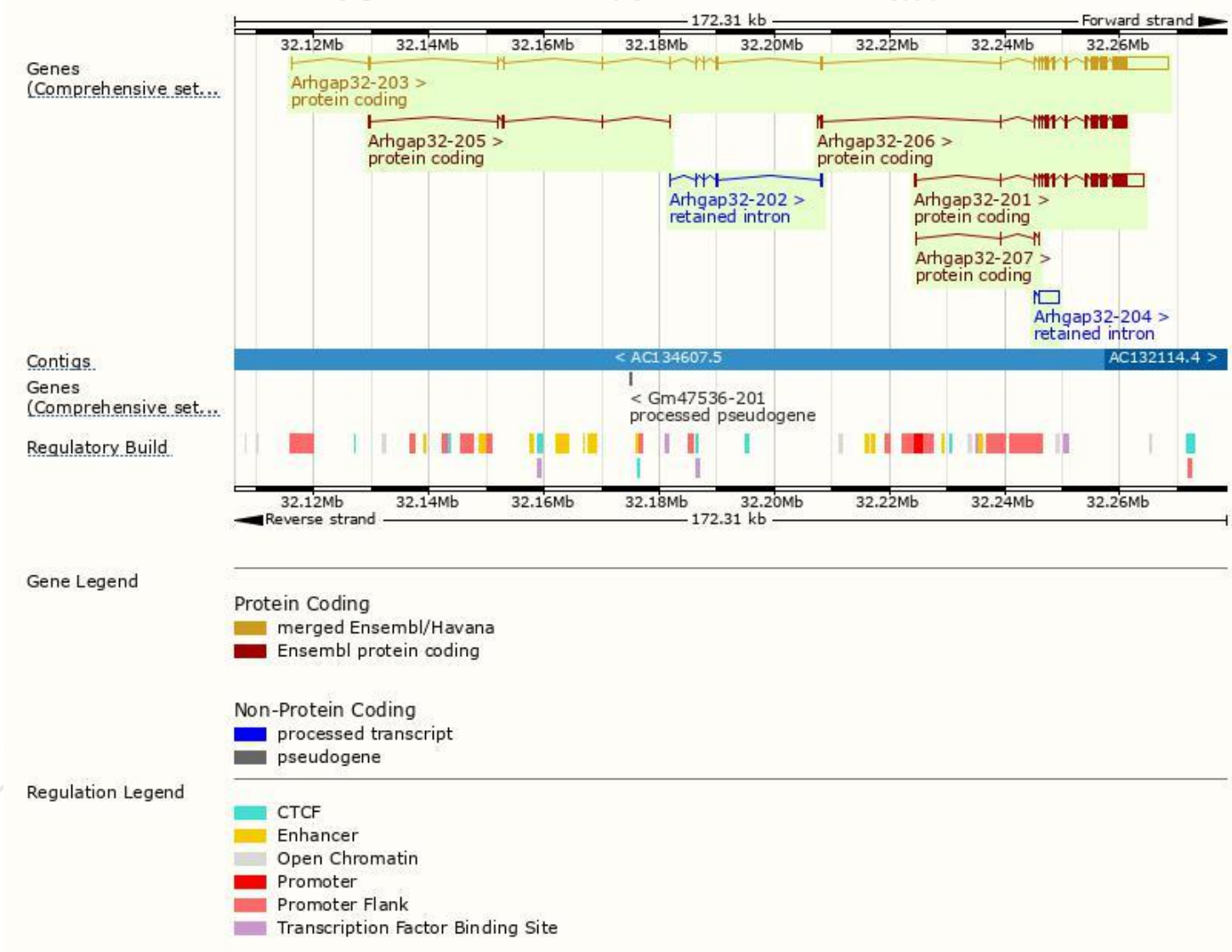
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Arhgap32-203	ENSMUST00000174641.7	13568	2089aa	Protein coding	CCDS57666	Q811P8	TSL:5 GENCODE basic APPRIS P1
Arhgap32-201	ENSMUST00000168954.8	8703	1740aa	Protein coding	CCDS22951	Q811P8	TSL:5 GENCODE basic
Arhgap32-206	ENSMUST00000182802.7	5621	1740aa	Protein coding	CCDS22951	Q811P8	TSL:1 GENCODE basic
Arhgap32-205	ENSMUST00000182310.1	540	180aa	Protein coding	-	S4R2G6	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:5
Arhgap32-207	ENSMUST00000183121.1	380	91aa	Protein coding	-	S4R2C0	CDS 3' incomplete TSL:5
Arhgap32-204	ENSMUST00000174730.1	3638	No protein	Retained intron	-	-	TSL:2
Arhgap32-202	ENSMUST00000174314.1	543	No protein	Retained intron	-	-	TSL:3

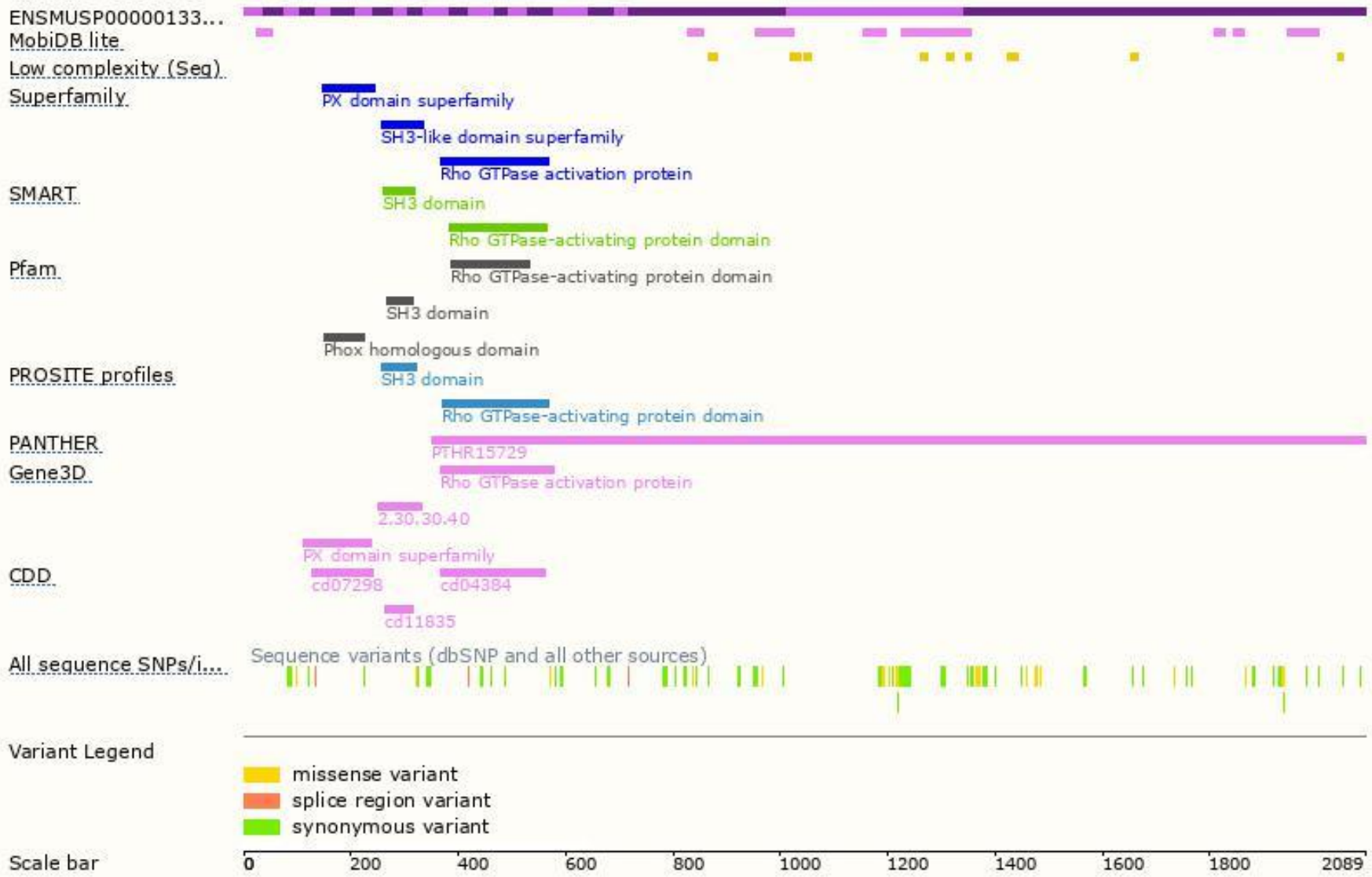
The strategy is based on the design of *Arhgap32-203* transcript,The transcription is shown below



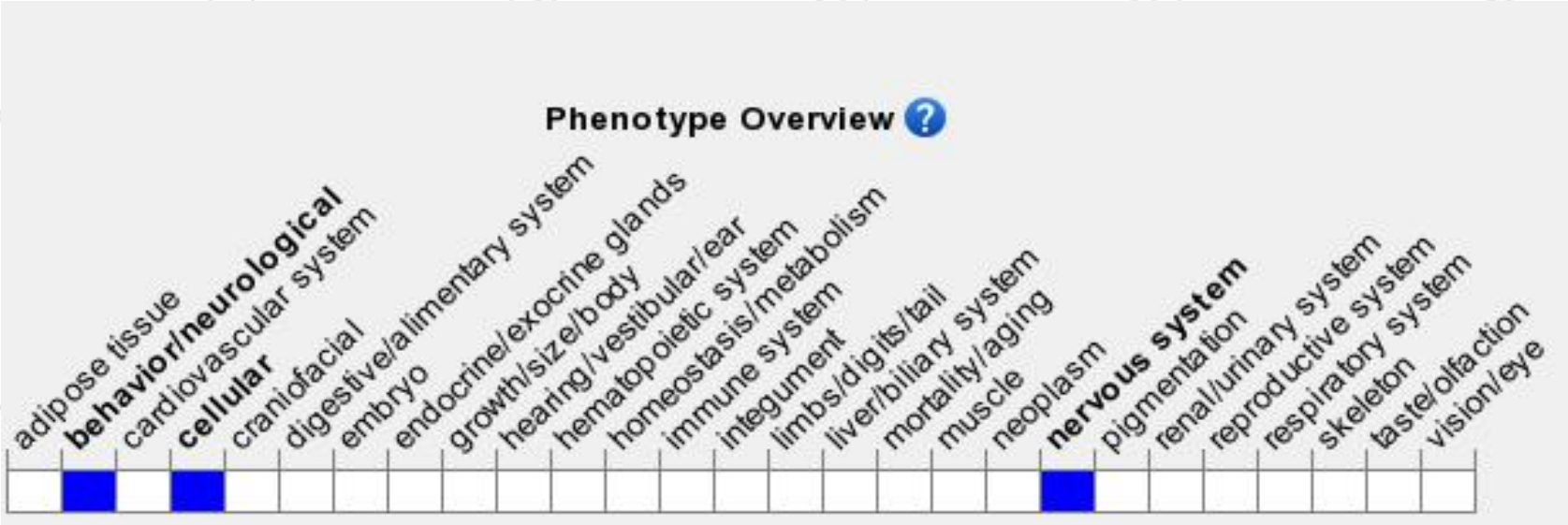
Genomic location distribution



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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