

Sorcs2 Cas9-CKO Strategy

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Project Overview

Project Name

Sorcs2

Project type

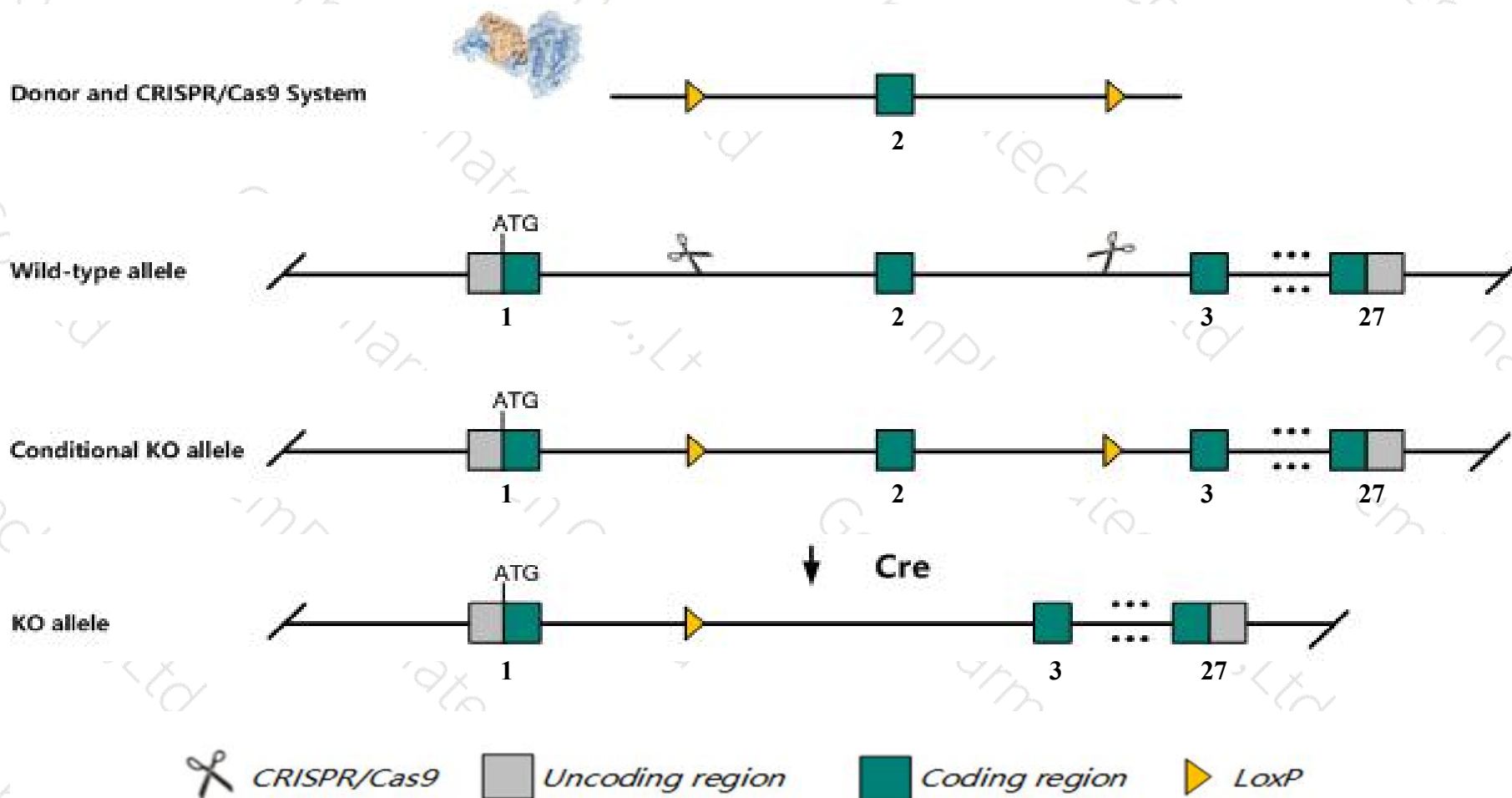
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Sorcs2* gene. The schematic diagram is as follows:



Technical routes

- The *Sorcs2* gene has 5 transcripts. According to the structure of *Sorcs2* gene, exon2 of *Sorcs2-201* (ENSMUST00000037370.13) transcript is recommended as the knockout region. The region contains 68bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Sorcs2* 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 inactivation of this gene leads to reduced dopamine levels and dopamine metabolism, dopaminergic hyperinnervation of the frontal cortex, hyperactivity, abnormal behavioral response to amphetamine, and decreased induction of Schwann cell apoptosis following sciatic nerve injury.
- The *Sorcs2* gene is located on the Chr5. 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)

Sorcs2 sortilin-related VPS10 domain containing receptor 2 [Mus musculus (house mouse)]

Gene ID: 81840, updated on 31-Jan-2019

Summary



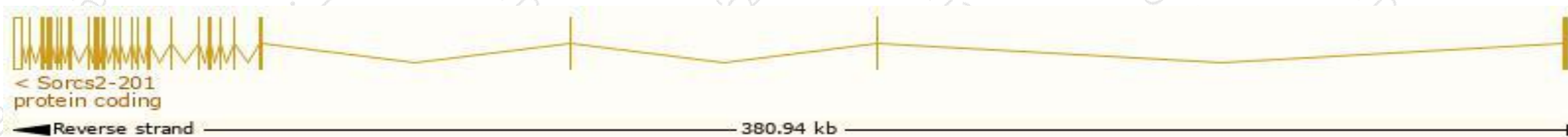
Official Symbol	Sorcs2 provided by MGI
Official Full Name	sortilin-related VPS10 domain containing receptor 2 provided by MGI
Primary source	MGI:MGI:1932289
See related	Ensembl:ENSMUSG00000029093
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	N28137, mKIAA1329
Expression	Broad expression in ovary adult (RPKM 13.6), limb E14.5 (RPKM 13.3) and 24 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

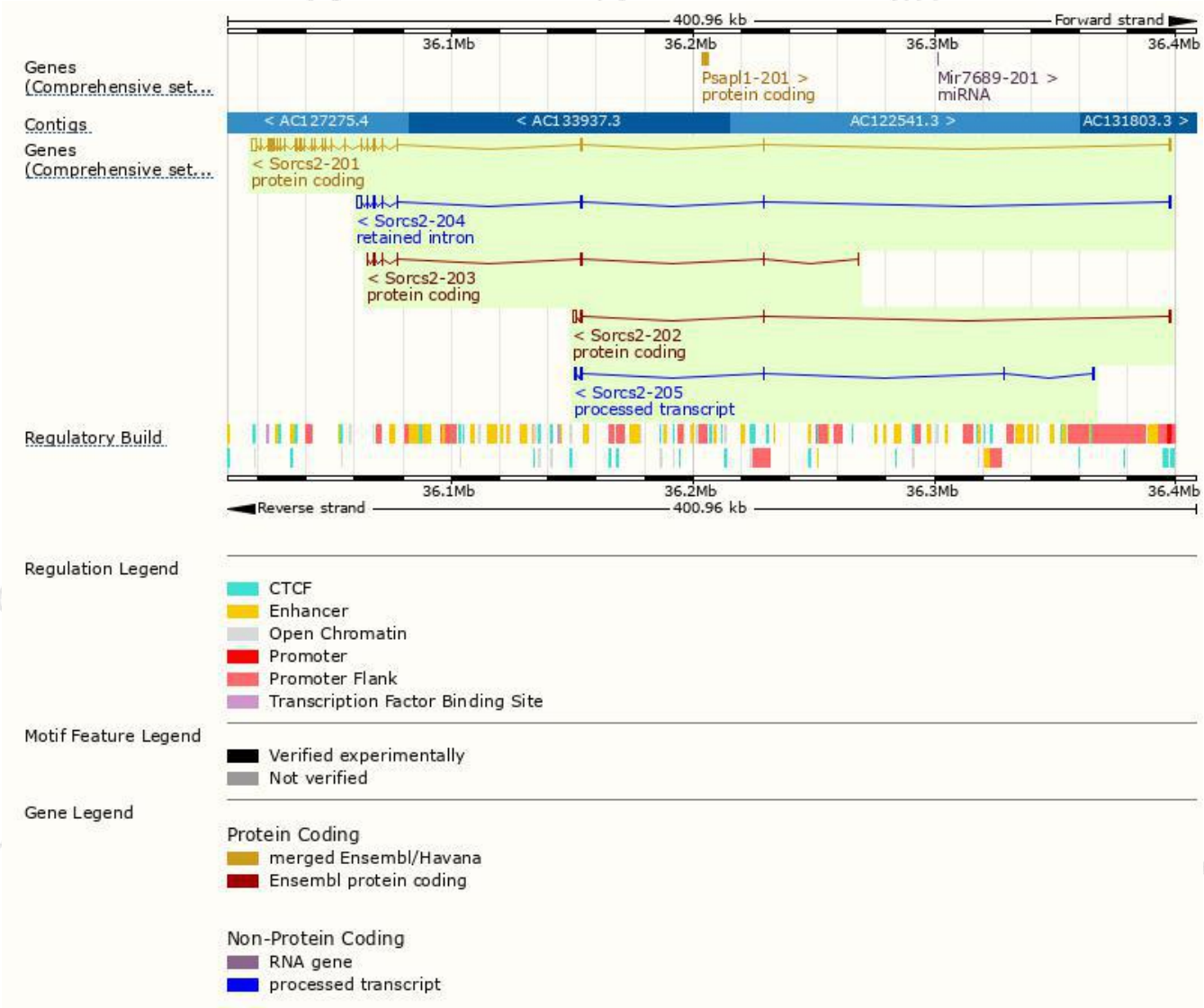
The gene has 5 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Sorcs2-201	ENSMUST00000037370.13	5707	1159aa	Protein coding	CCDS19237	Q9EPR5	TSL:1 GENCODE basic APPRIS P1
Sorcs2-202	ENSMUST00000070720.7	2089	232aa	Protein coding	-	Q8BI74	TSL:1 GENCODE basic
Sorcs2-203	ENSMUST00000135324.7	665	172aa	Protein coding	-	D3YYF4	CDS 3' incomplete TSL:3
Sorcs2-205	ENSMUST00000141508.1	650	No protein	Processed transcript	-	-	TSL:3
Sorcs2-204	ENSMUST00000137040.7	2680	No protein	Retained intron	-	-	TSL:1

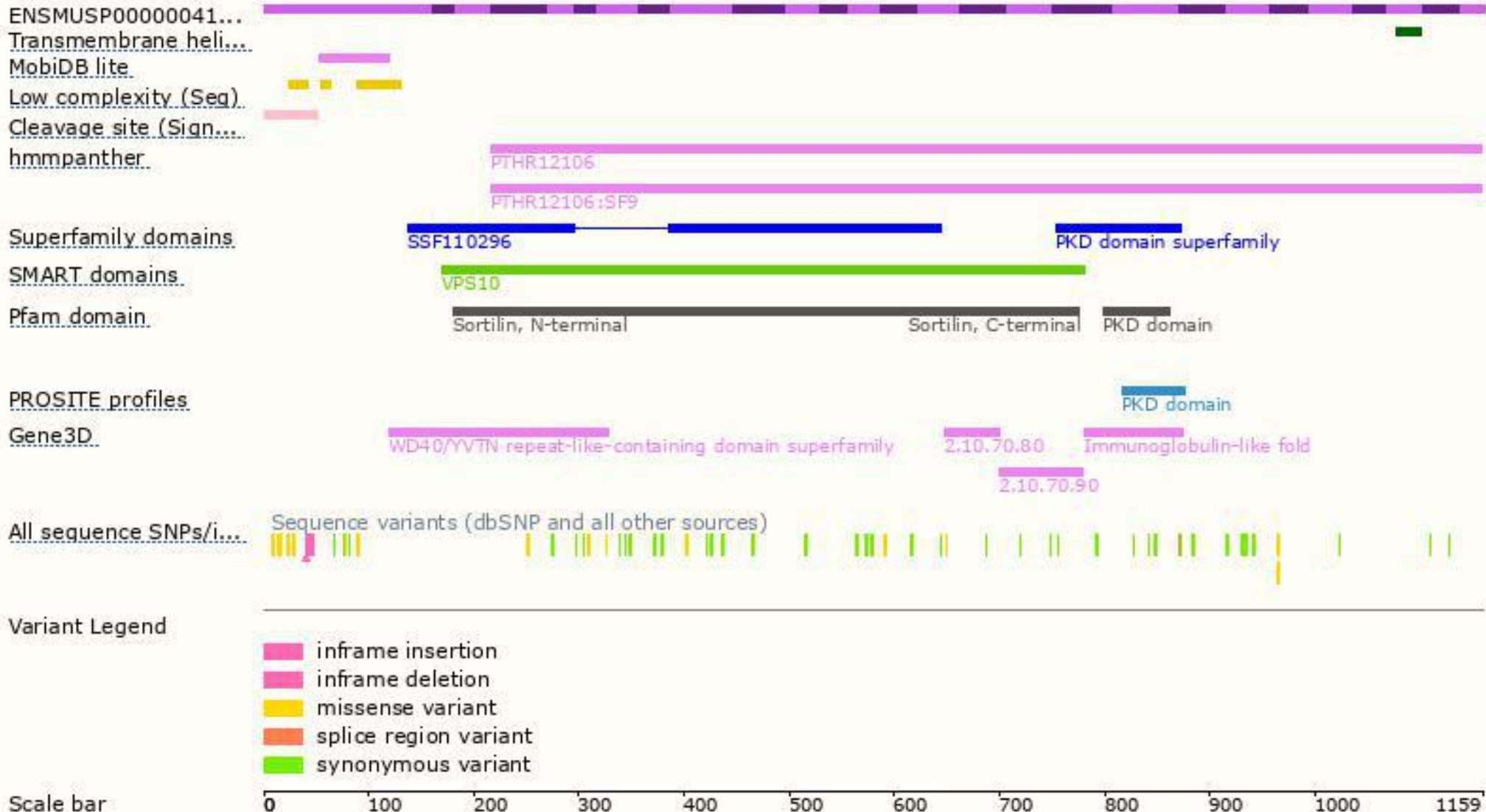
The strategy is based on the design of *Sorcs2-201* transcript, The transcription is shown below



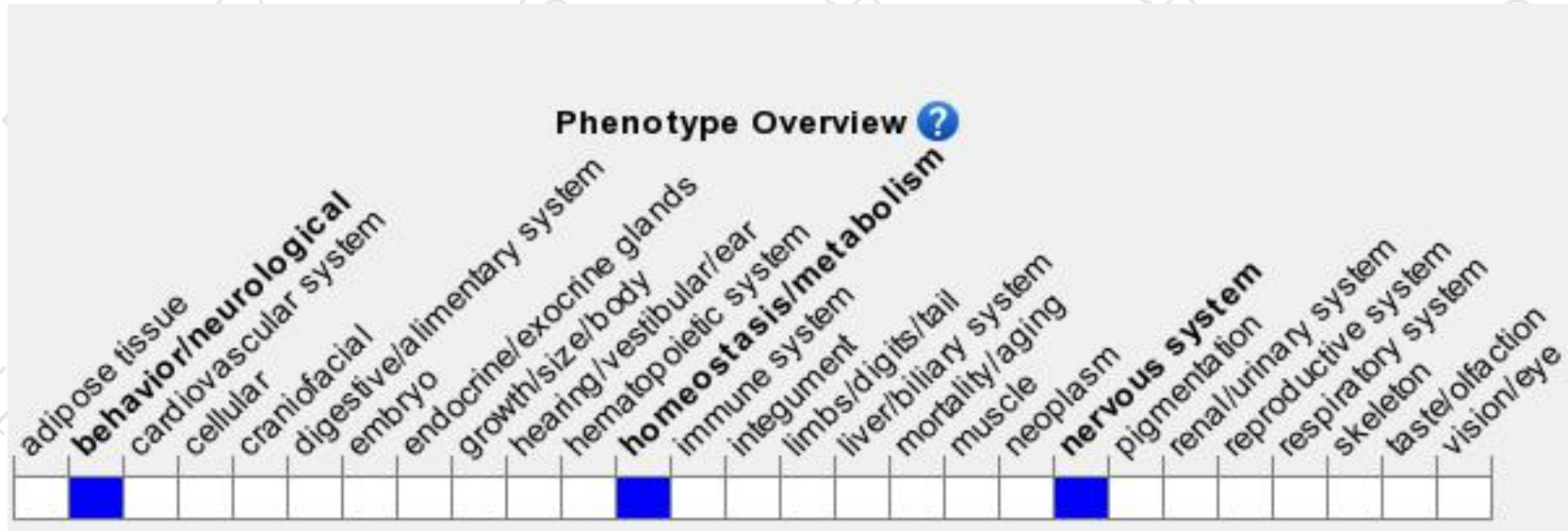
Genomic location distribution



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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