Slc9a1 Cas9-CKO Strategy

Designer: Lingyan Wu

Reviewer: Miaomiao Cui

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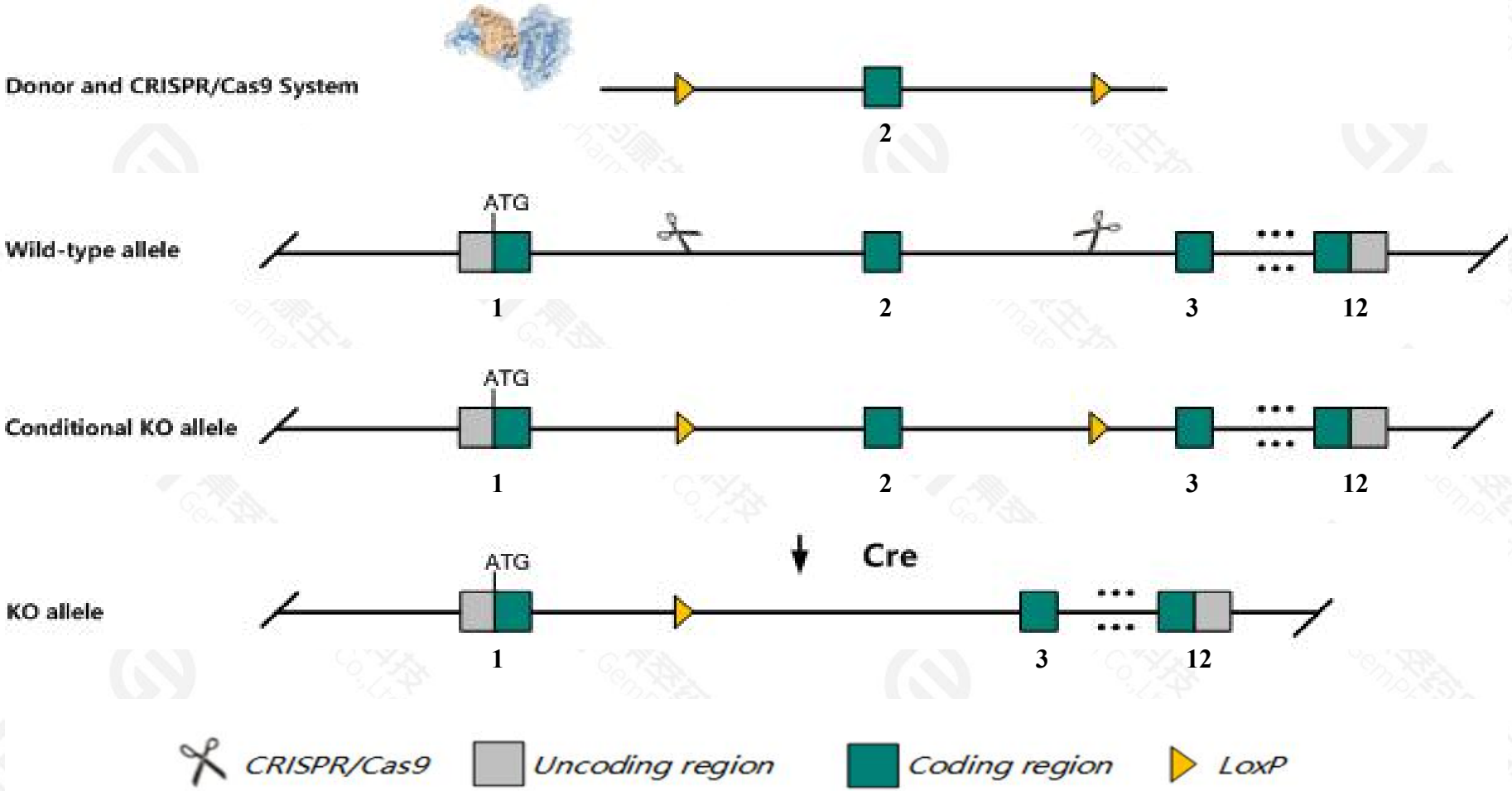
Project Overview

Project Name	***Slc9a1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc9a1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Slc9a1* gene has 5 transcripts. According to the structure of *Slc9a1* gene, exon2 of *Slc9a1-201*(ENSMUST00000030669.8) transcript is recommended as the knockout region.The region contains 461bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Slc9a1* 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,two-thirds of homozygous null mice die before weaning with reduced body weight, ataxia, a relatively mild stomach phenotype, and a postmortem appearance suggestive of death by a convulsive seizure. Homozygotes also display impaired fluid secretion and NaCl absorption in their parotid glands.

➢ The *Slc9a1* gene is located on the Chr4. 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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Slc9a1 solute carrier family 9 (sodium/hydrogen exchanger), member 1 [Mus musculus (house mouse)]

Gene ID: 20544, updated on 22-Mar-2020

Summary

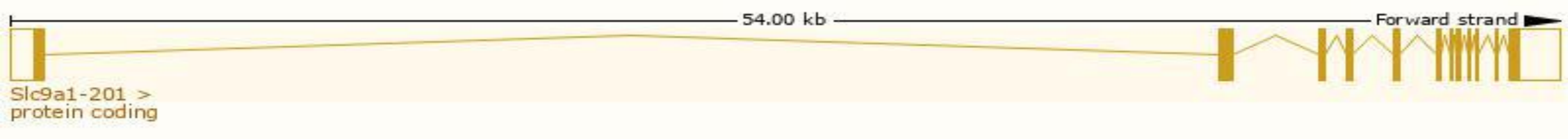
Official Symbol	Slc9a1 provided by MGI
Official Full Name	solute carrier family 9 (sodium/hydrogen exchanger), member 1 provided by MGI
Primary source	MGI:MGI:102462
See related	Ensembl:ENSMUSG00000028854
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AW554487, Apnh, Mir5122, Nhe1, mir-5122, swe
Expression	Ubiquitous expression in stomach adult (RPKM 66.6), adrenal adult (RPKM 34.2) and 25 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

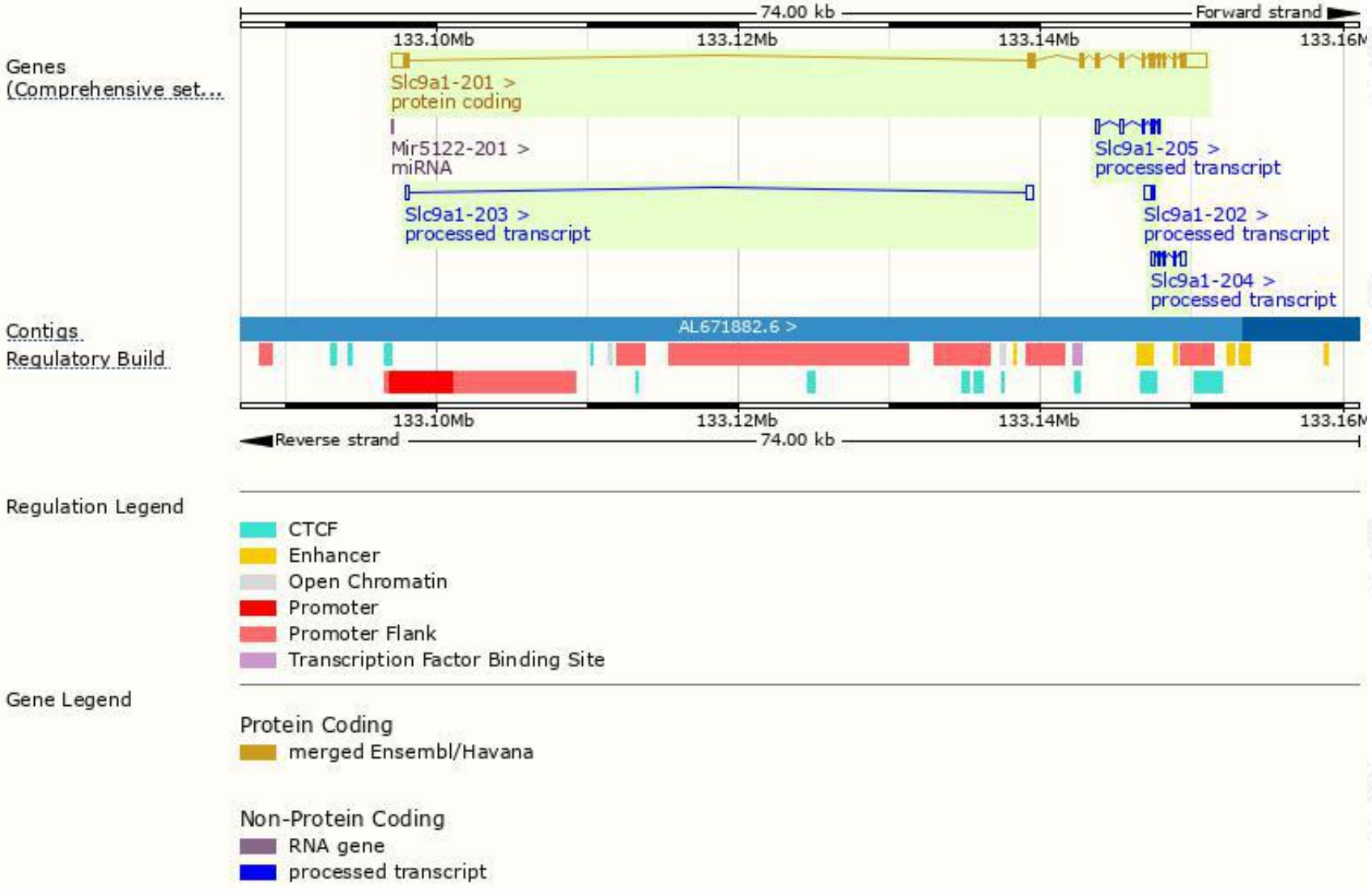
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc9a1-201	ENSMUST00000030669.7	4676	820aa	Protein coding	CCDS38903	Q3UDC9 Q61165	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1
Slc9a1-204	ENSMUST00000141658.1	928	No protein	Processed transcript	-	-	TSL:2
Slc9a1-205	ENSMUST00000156079.1	760	No protein	Processed transcript	-	-	TSL:3
Slc9a1-203	ENSMUST00000140681.1	725	No protein	Processed transcript	-	-	TSL:3
Slc9a1-202	ENSMUST00000132864.1	579	No protein	Processed transcript	-	-	TSL:3

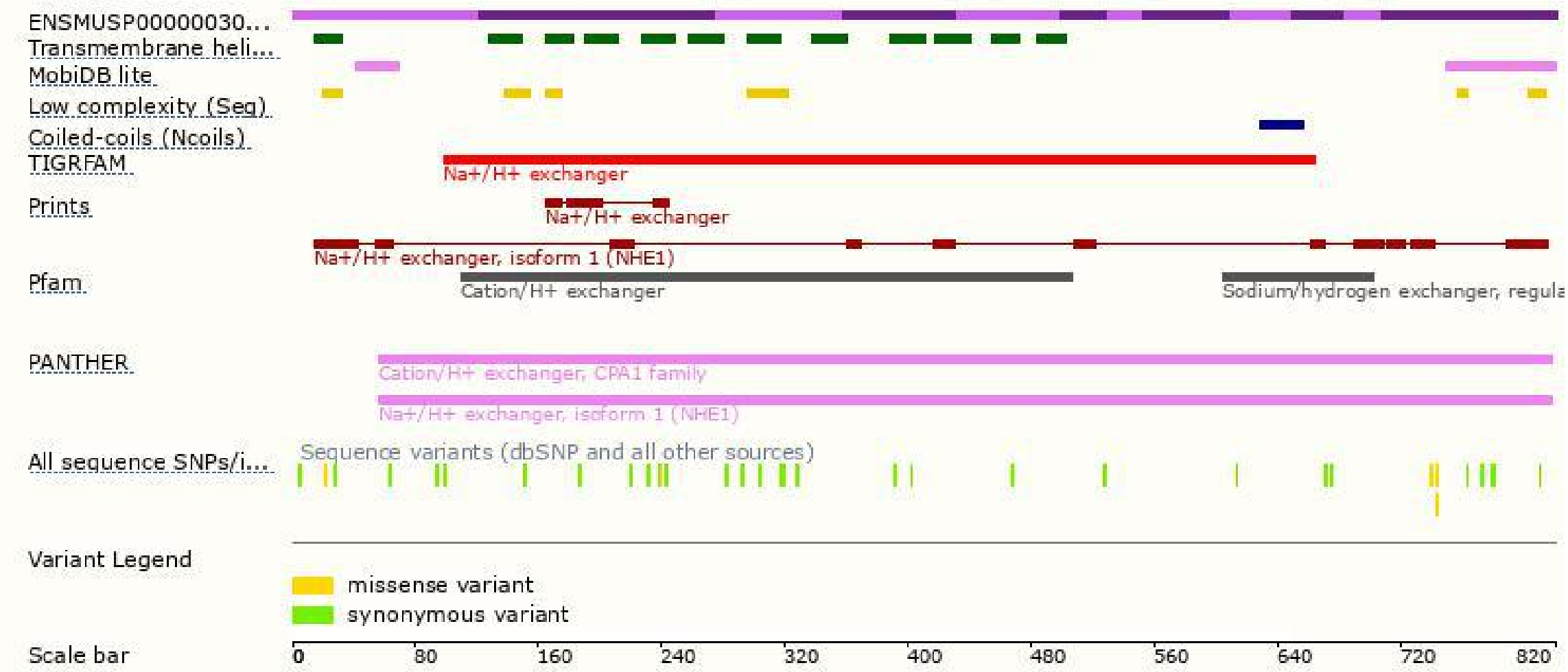
The strategy is based on the design of *Slc9a1-201* transcript,the transcription is shown below:



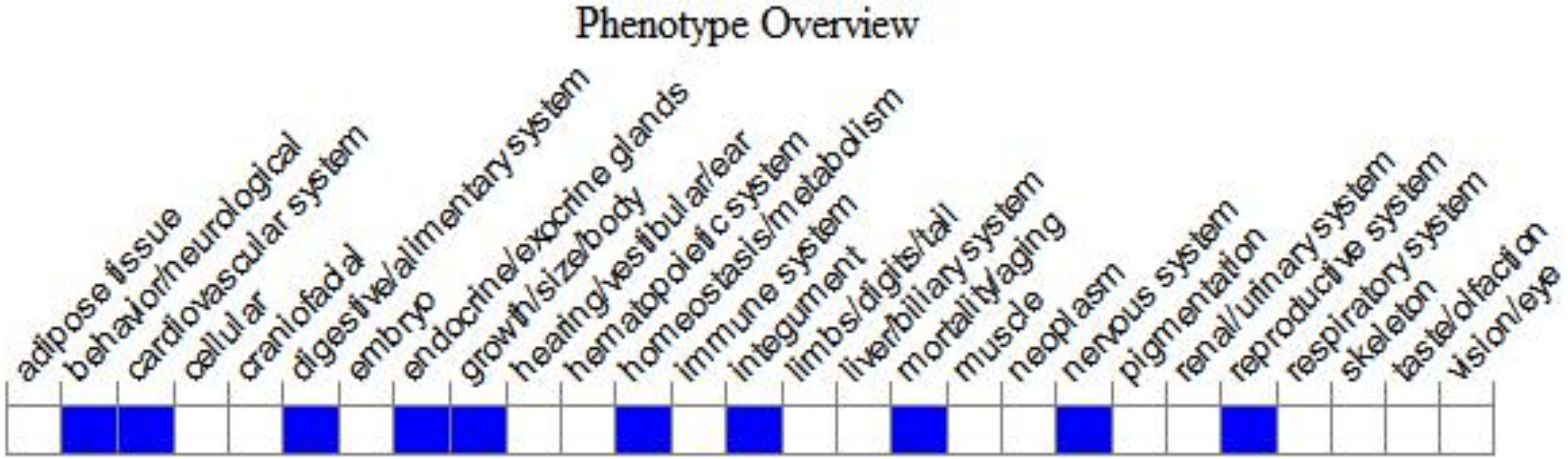
Genomic location distribution



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.
Tel: 400-9660890

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