

Slc6a1 Cas9-CKO Strategy

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Reviewer:

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Design Date:

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Project Overview

Project Name

Slc6a1

Project type

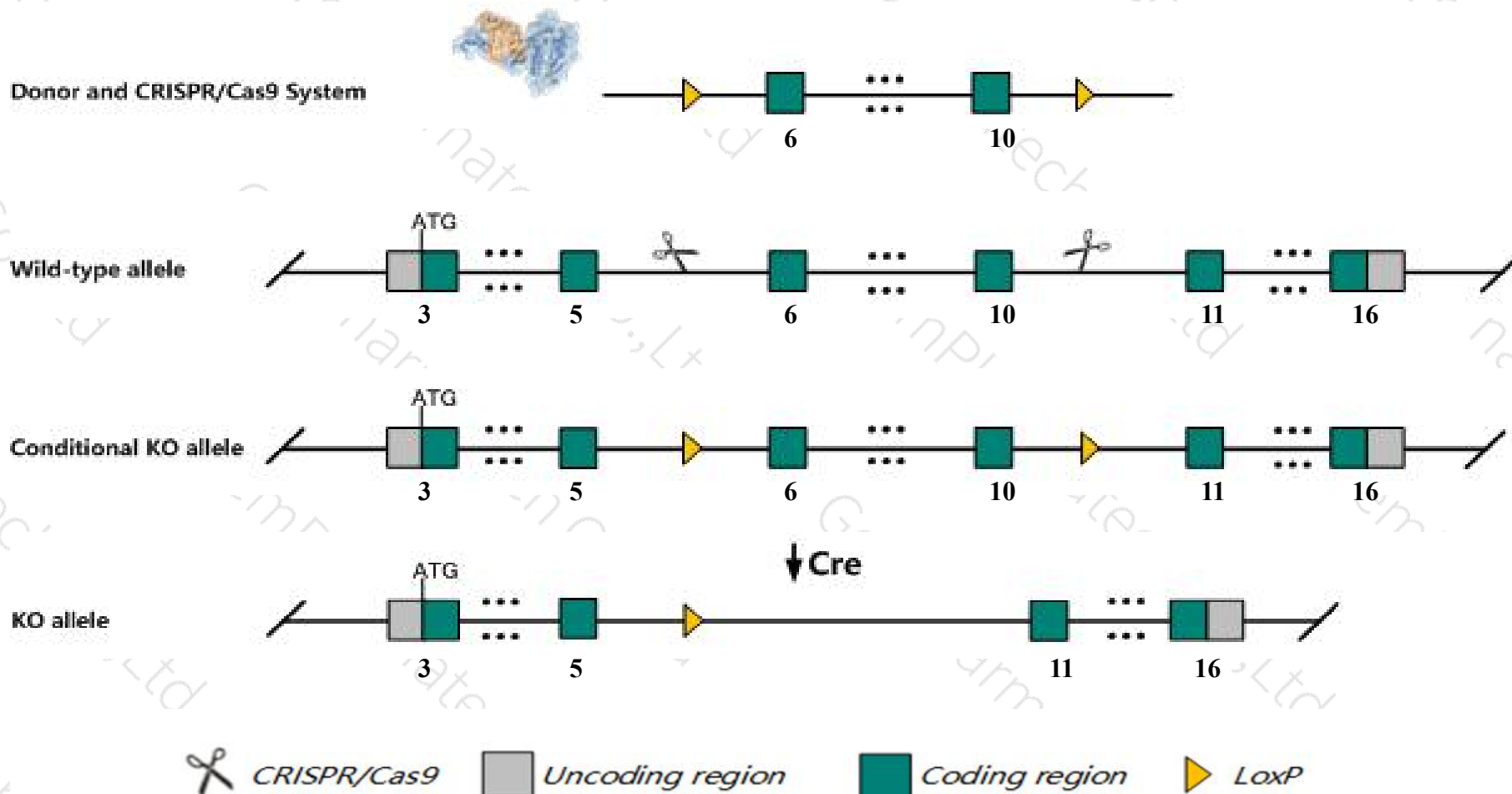
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Slc6a1* gene. The schematic diagram is as follows:



Technical routes

- The *Slc6a1* gene has 7 transcripts. According to the structure of *Slc6a1* gene, exon6-exon10 of *Slc6a1-201* (ENSMUST00000032454.7) transcript is recommended as the knockout region. The region contains 607bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Slc6a1* 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 hypomorphic mice display abnormal inhibitory postsynaptic currents, and abnormal GABA uptake and release. Null mice show hyperactivity and various behavioral abnormalities, as well as an aversion to bitter taste.
- The *Slc6a1* gene is located on the Chr6. 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)

Slc6a1 solute carrier family 6 (neurotransmitter transporter, GABA), member 1 [Mus musculus (house mouse)]

Gene ID: 232333, updated on 31-Jan-2019

Summary



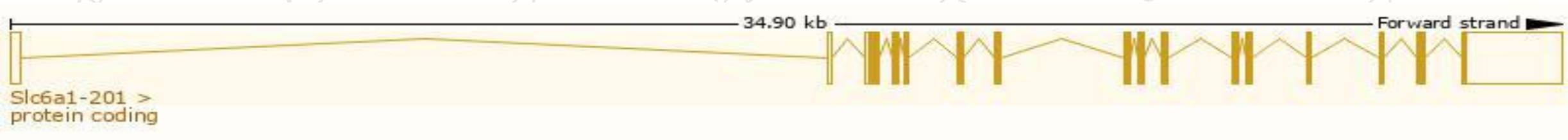
Official Symbol	Slc6a1 provided by MGI
Official Full Name	solute carrier family 6 (neurotransmitter transporter, GABA), member 1 provided by MGI
Primary source	MGI:MGI:95627
See related	Ensembl:ENSMUSG00000030310
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	A730043E01, GABATHG, GABATR, GAT-1, Gabt, Gabt1, Gat1, XT-1, Xtrp1
Expression	Biased expression in cerebellum adult (RPKM 126.5), frontal lobe adult (RPKM 110.5) and 5 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

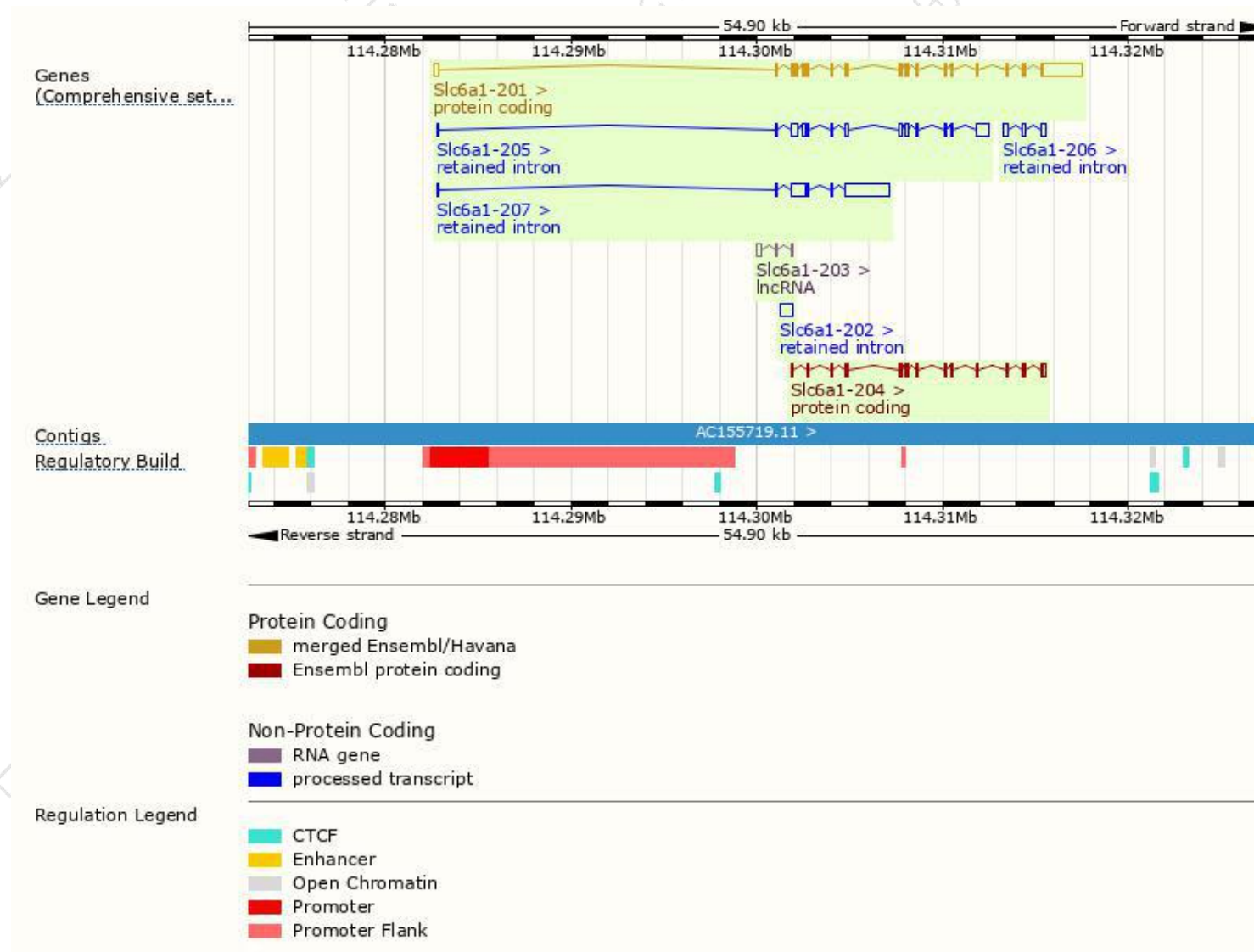
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Slc6a1-201	ENSMUST00000032454.7	4302	599aa	Protein coding	CCDS20434	P31648	TSL:1 GENCODE basic APPRIS P1
Slc6a1-204	ENSMUST00000204074.1	1740	415aa	Protein coding	-	A0A0N4SVF5	TSL:5 GENCODE basic
Slc6a1-207	ENSMUST00000204600.2	3449	No protein	Retained intron	-	-	TSL:1
Slc6a1-205	ENSMUST00000204278.2	2275	No protein	Retained intron	-	-	TSL:1
Slc6a1-206	ENSMUST00000204540.1	722	No protein	Retained intron	-	-	TSL:1
Slc6a1-202	ENSMUST00000203100.1	708	No protein	Retained intron	-	-	TSL:NA
Slc6a1-203	ENSMUST00000203330.1	400	No protein	lncRNA	-	-	TSL:5

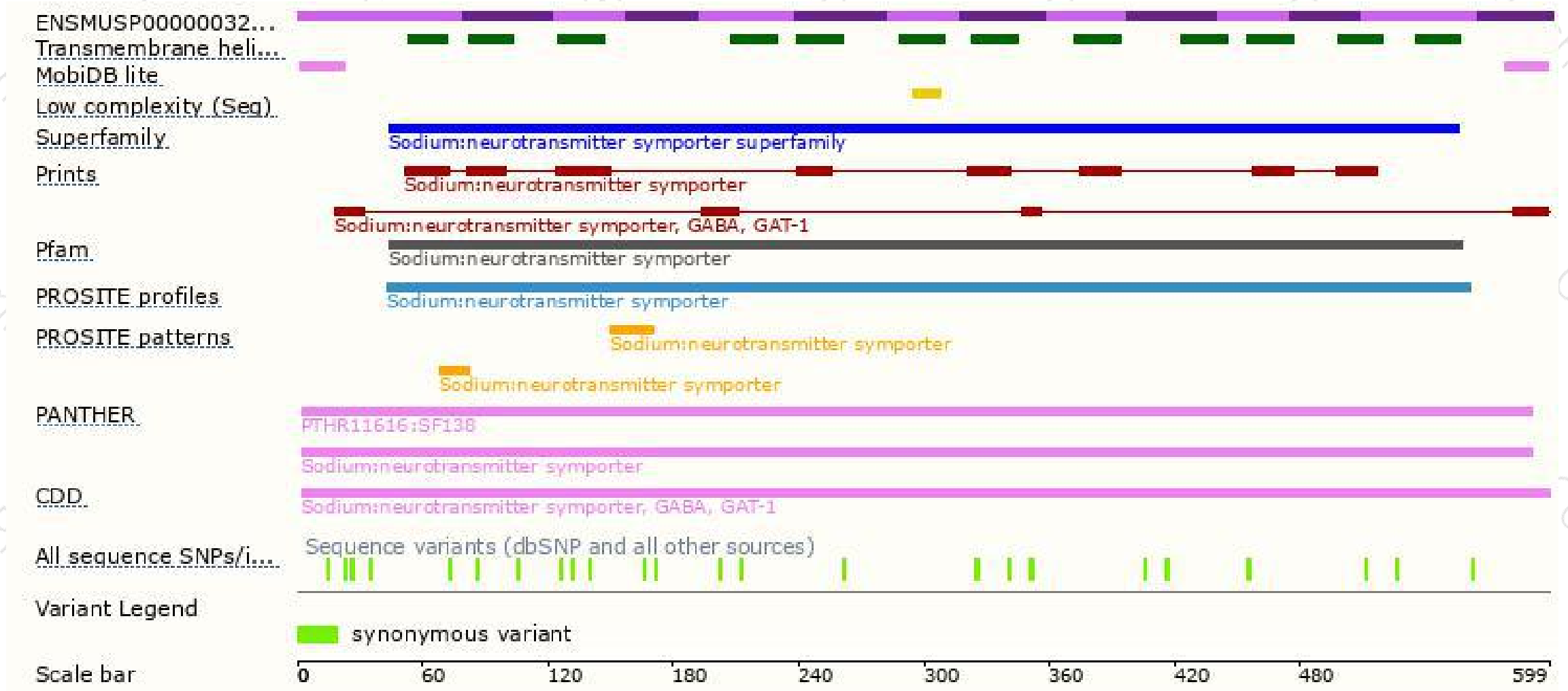
The strategy is based on the design of *Slc6a1-201* transcript,The transcription is shown below



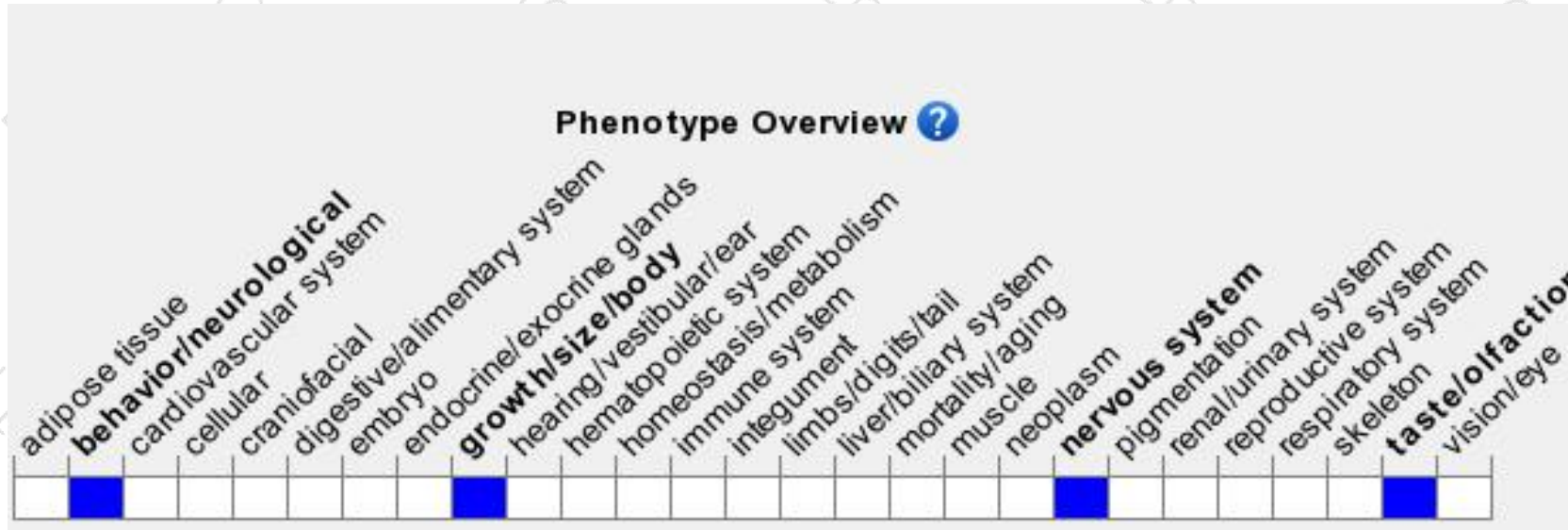
Genomic location distribution



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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