

Grm8 Cas9-CKO Strategy

Designer:

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Design Date:

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Project Overview

Project Name

Grm8

Project type

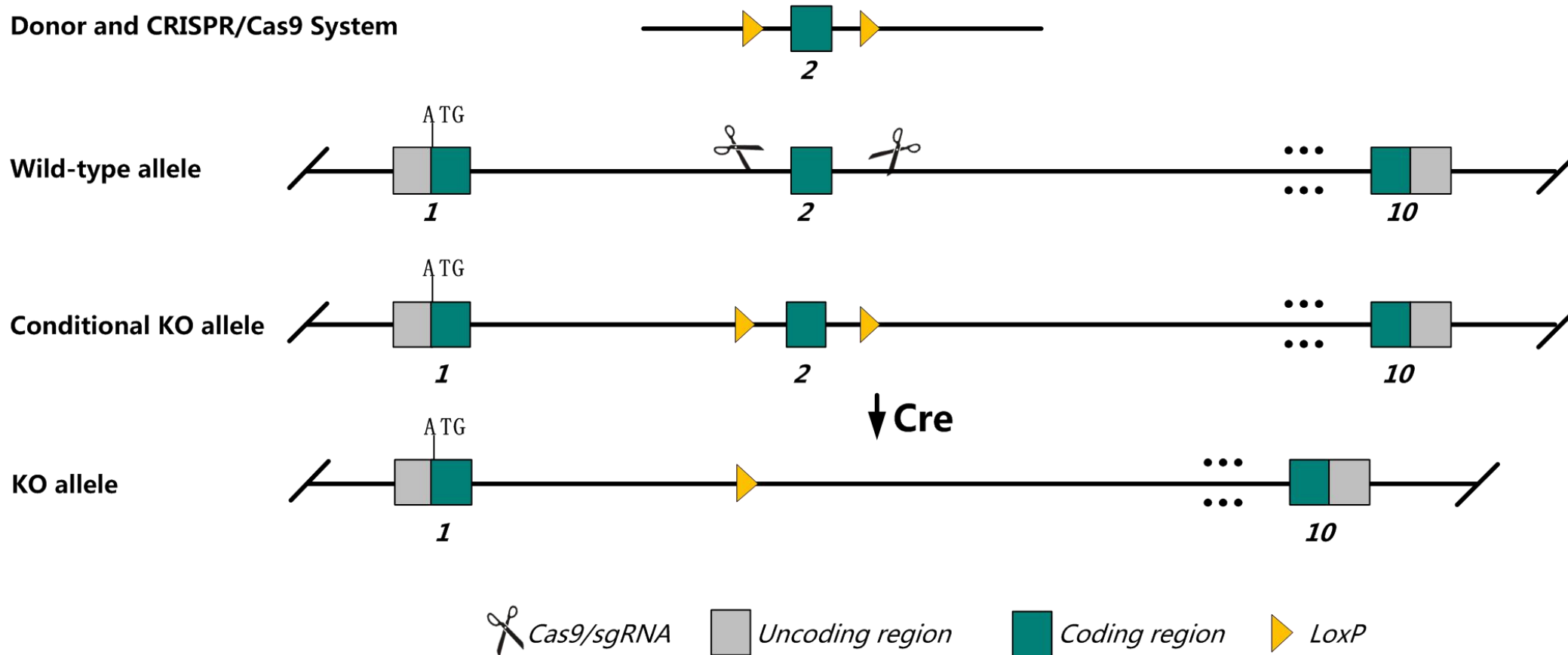
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Grm8* gene. The schematic diagram is as follows:



- The *Grm8* gene has 7 transcripts. According to the structure of *Grm8* gene, exon2 of *Grm8-201* (ENSMUST00000090512.9) transcript is recommended as the knockout region. The region contains 217bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Grm8* 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, Mice homozygous for a knock-out allele are overweight and mildly insulin resistant, and display increased anxiety-related responses and reduced exploration in a new environment.
Mice homozygous for a different knock-out allele exhibit altered excitatory responses in the dentate gyrus.
- The *Grm8* 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)

Grm8 glutamate receptor, metabotropic 8 [Mus musculus (house mouse)]

Gene ID: 14823, updated on 31-Jan-2019

Summary



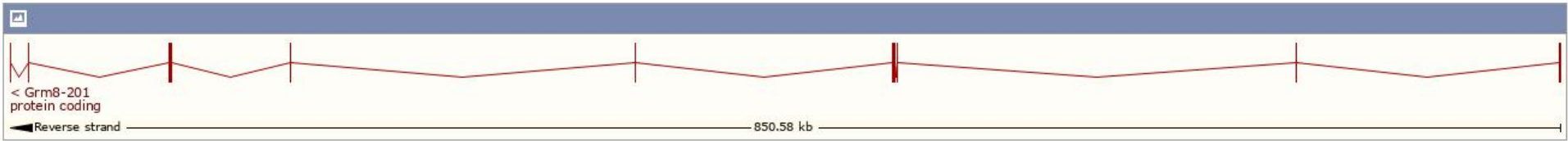
Official Symbol	Grm8 provided by MGI
Official Full Name	glutamate receptor, metabotropic 8 provided by MGI
Primary source	MGI:MGI:1351345
See related	Ensembl:ENSMUSG00000024211
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	A230002O04, GluR8, Gprc1h, mGluR8
Expression	Biased expression in frontal lobe adult (RPKM 2.3), CNS E18 (RPKM 1.6) and 6 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

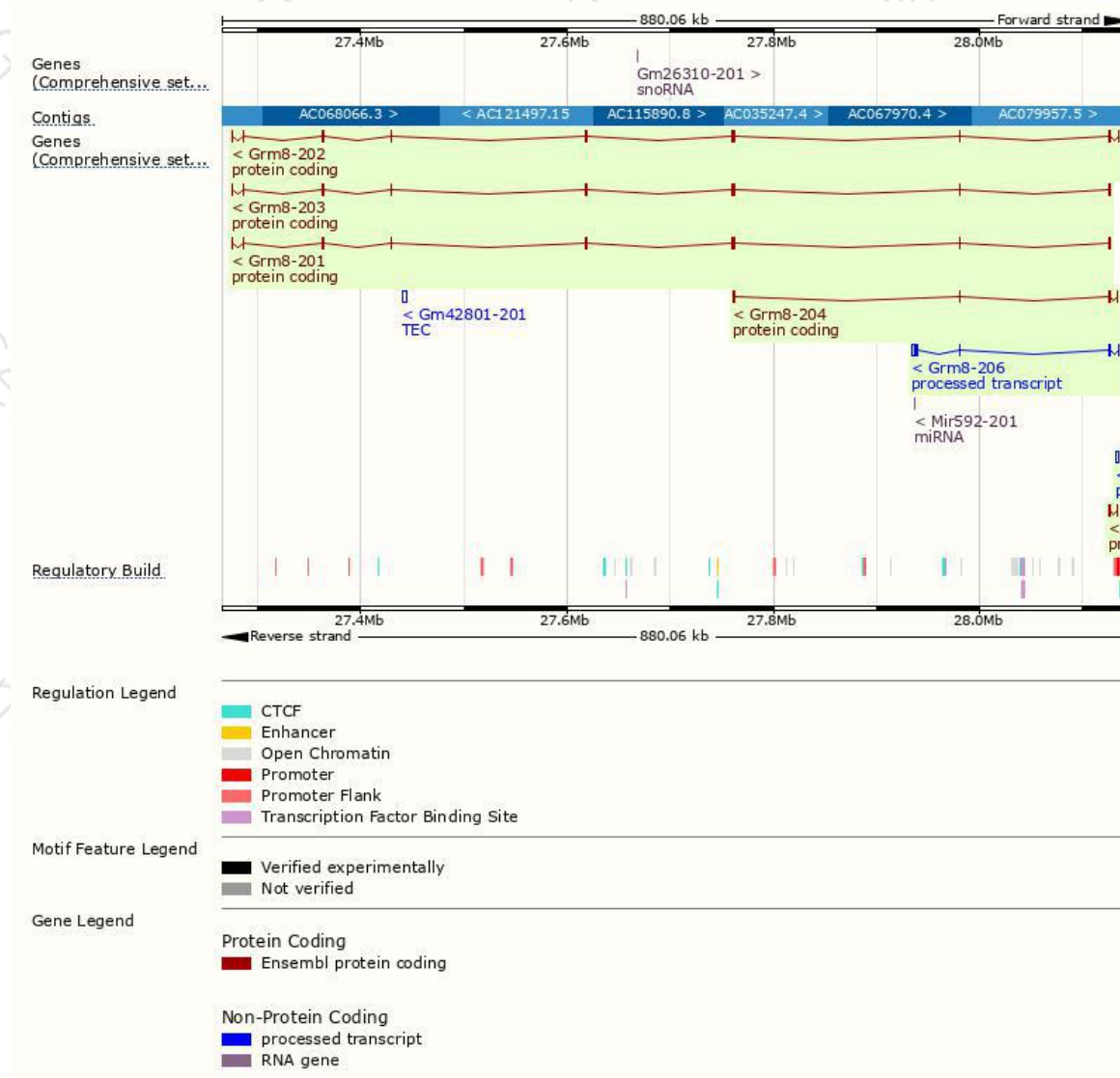
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Grm8-202	ENSMUST00000115323.7	3856	908aa	Protein coding	CCDS39443	Q05BD6	TSL:1 GENCODE basic APPRIS P3
Grm8-203	ENSMUST00000115324.8	3299	908aa	Protein coding	CCDS39443	Q05BD6	TSL:1 GENCODE basic APPRIS P3
Grm8-201	ENSMUST00000090512.9	2830	908aa	Protein coding	CCDS80495	B7ZMR4 P47743	TSL:1 GENCODE basic APPRIS ALT 1
Grm8-204	ENSMUST00000131897.1	1238	293aa	Protein coding	-	D3YZL1	CDS 3' incomplete TSL:1
Grm8-205	ENSMUST00000132755.1	532	20aa	Protein coding	-	D3YZK8	CDS 3' incomplete TSL:5
Grm8-206	ENSMUST00000146727.1	4799	No protein	Processed transcript	-	-	TSL:1
Grm8-207	ENSMUST00000202861.1	2358	No protein	Processed transcript	-	-	TSL:NA

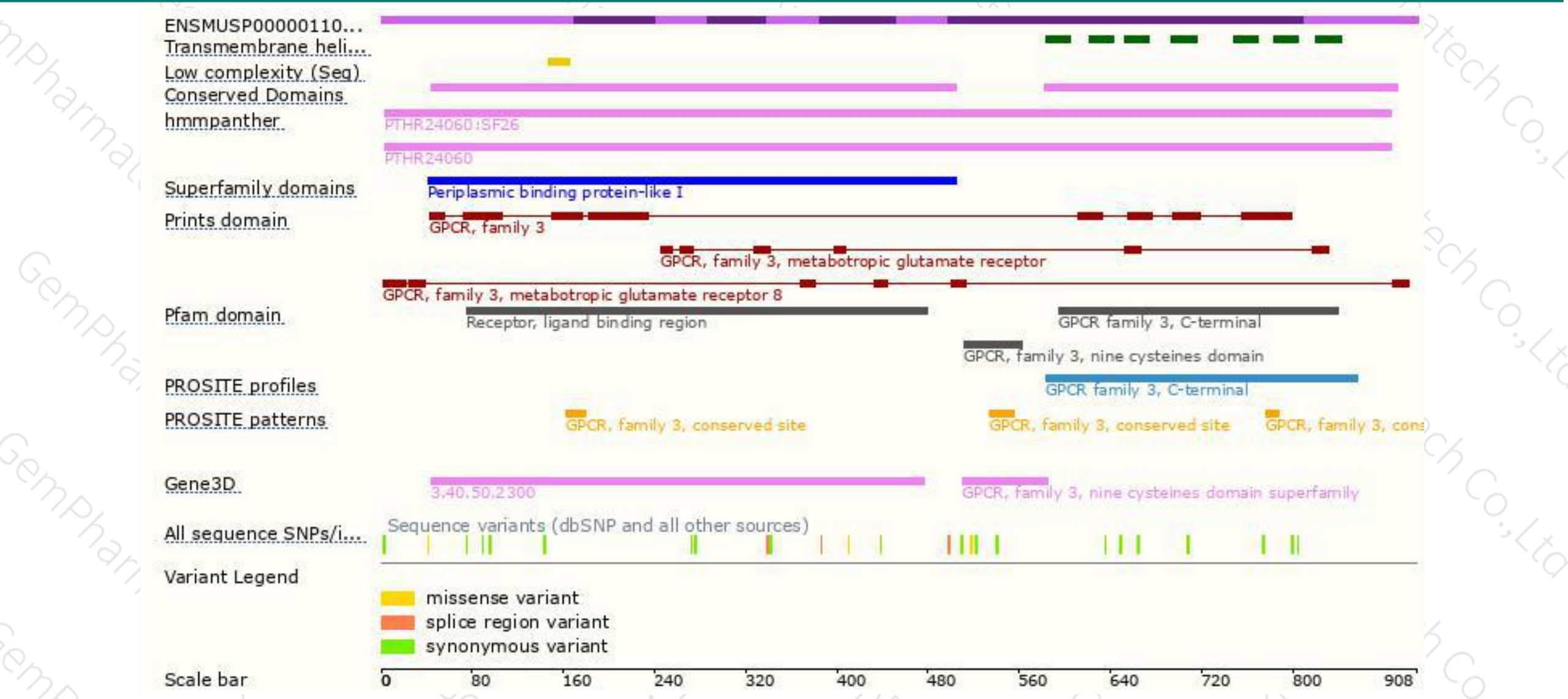
The strategy is based on the design of *Grm8-201* transcript,The transcription is shown below



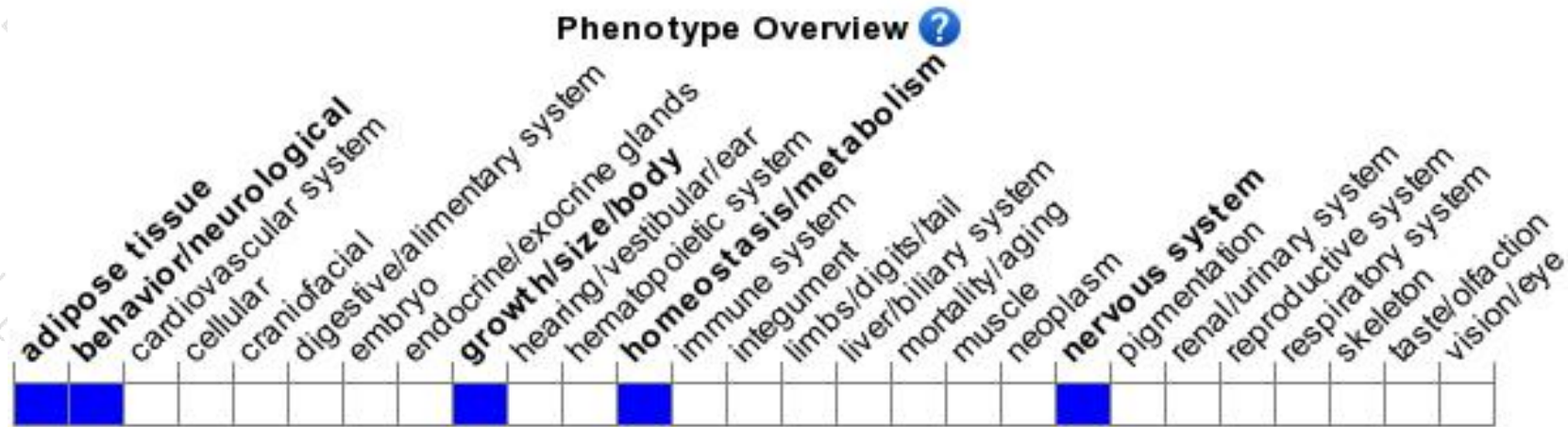
Genomic location distribution



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/>).

According to the existing MGI data, Mice homozygous for a knock-out allele are overweight and mildly insulin resistant, and display increased anxiety-related responses and reduced exploration in a new environment. Mice homozygous for different knock-out allele exhibit altered excitatory responses in the dentate gyrus.

If you have any questions, you are welcome to inquire.

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