

Gpr158 Cas9-CKO Strategy

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Project Overview

Project Name

Gpr158

Project type

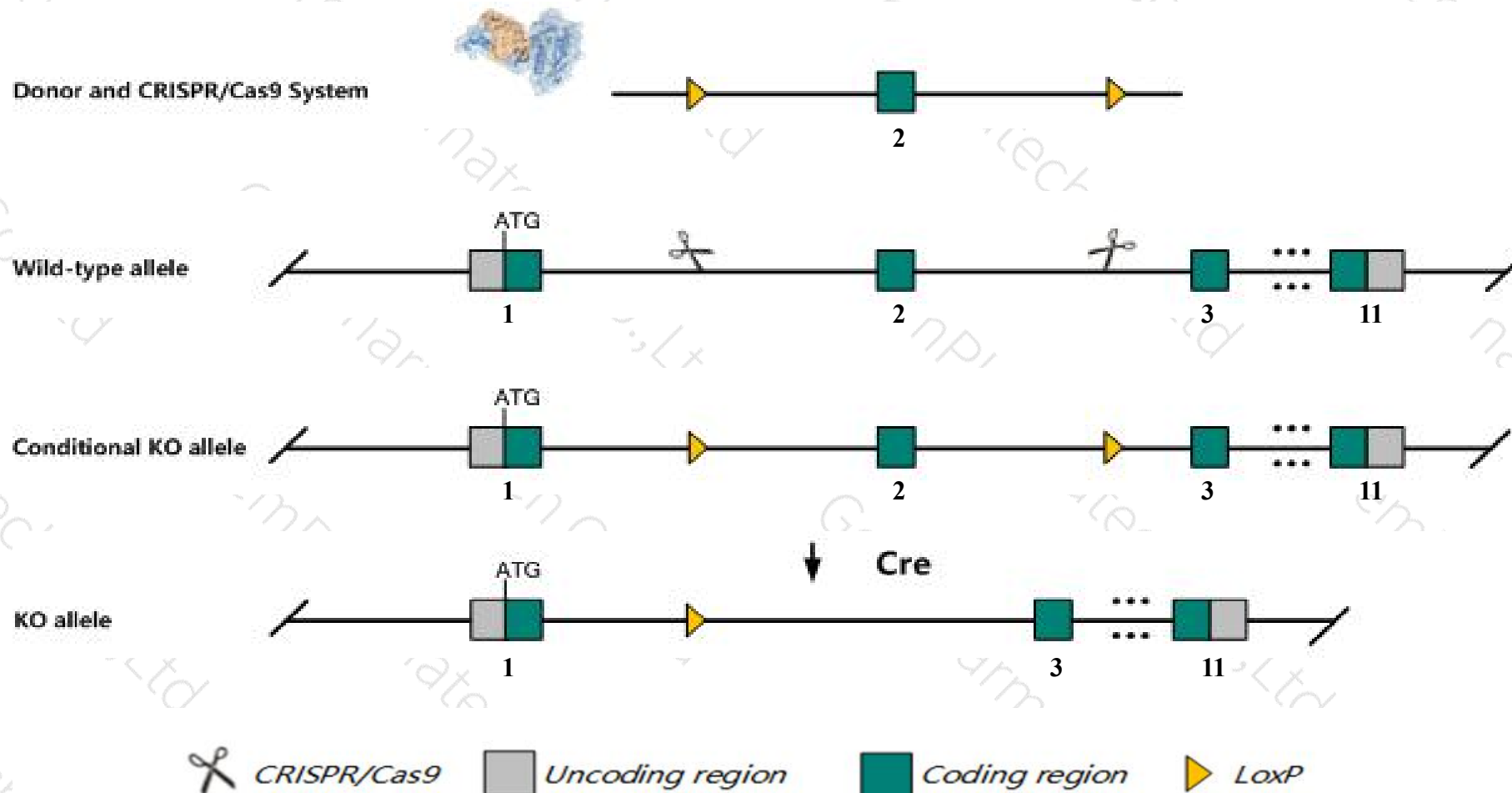
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gpr158* gene. The schematic diagram is as follows:



Technical routes

- The *Gpr158* gene has 2 transcripts. According to the structure of *Gpr158* gene, exon2 of *Gpr158-201* (ENSMUST00000055946.7) transcript is recommended as the knockout region. The region contains 106bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Gpr158* 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 exhibit antidepressant-like behaviors, reduced anxiety-related response and elevated AMPAR-signalling.
- The *Gpr158* gene is located on the Chr2. 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)

Gpr158 G protein-coupled receptor 158 [*Mus musculus* (house mouse)]

Gene ID: 241263, updated on 24-Dec-2019

Summary

- Official Symbol** Gpr158 provided by [MGI](#)
- Official Full Name** G protein-coupled receptor 158 provided by [MGI](#)
- Primary source** [MGI:MGI:2441697](#)
- See related** [Ensembl:ENSMUSG00000045967](#)
- 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** mKIAA1136; 5330427M13Rik
- Expression** Biased expression in cerebellum adult (RPKM 13.3), cortex adult (RPKM 13.2) and 4 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

Genomic context

Location: 2; 2 A3

See Gpr158 in [Genome Data Viewer](#)

Exon count: 11

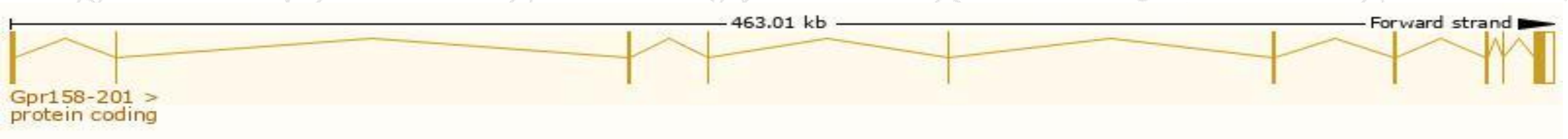
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	2	NC_000068.7 (21367567..21830544)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	2	NC_000068.6 (21289194..21752171)

Transcript information (Ensembl)

The gene has 2 transcripts,all transcripts are shown below:

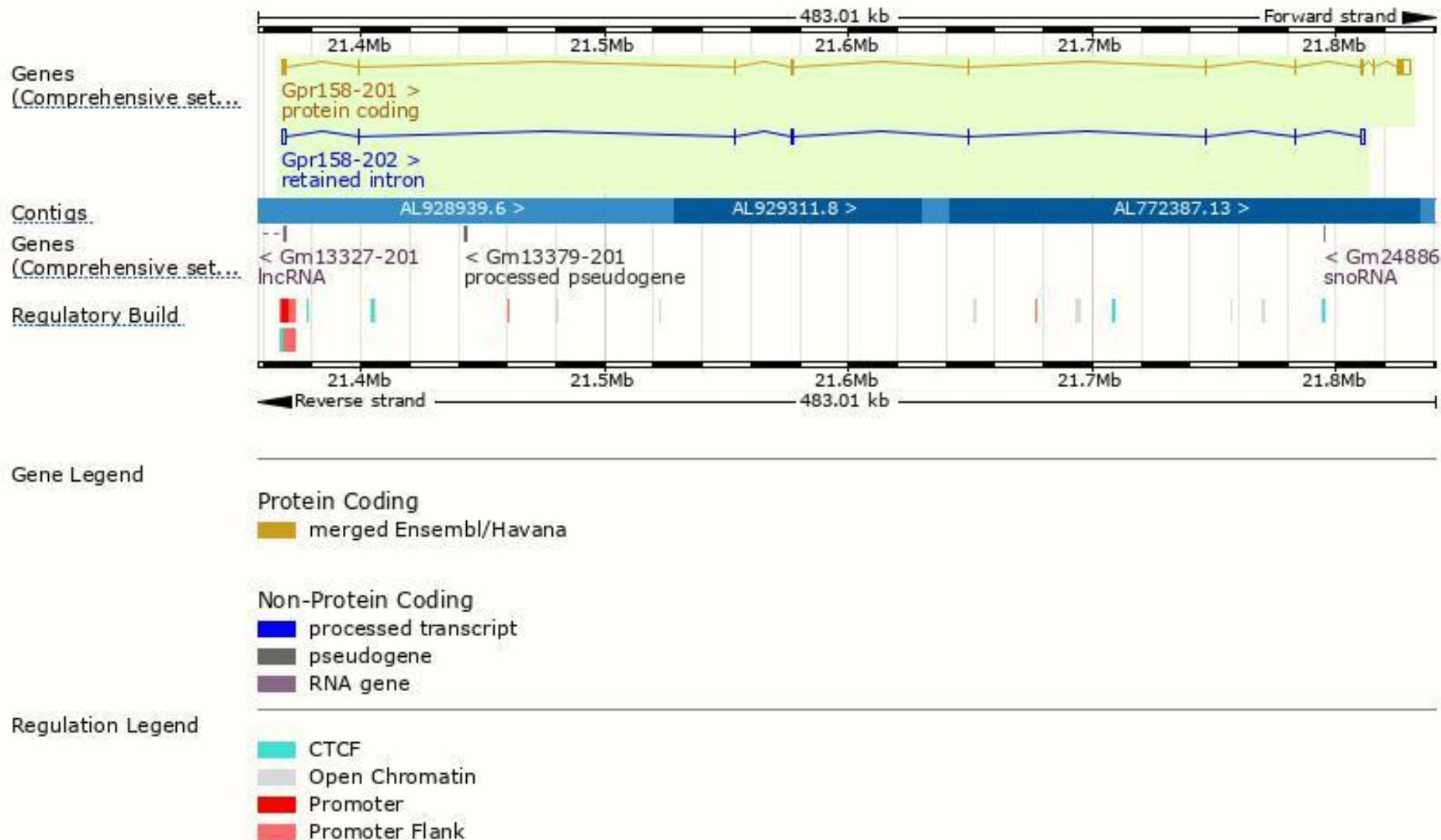
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gpr158-201	ENSMUST00000055946.7	7171	1200aa	Protein coding	CCDS15722	Q8C419	TSL:1 GENCODE basic APPRIS P1
Gpr158-202	ENSMUST00000155760.1	3580	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Gpr158-201* transcript,The transcription is shown below

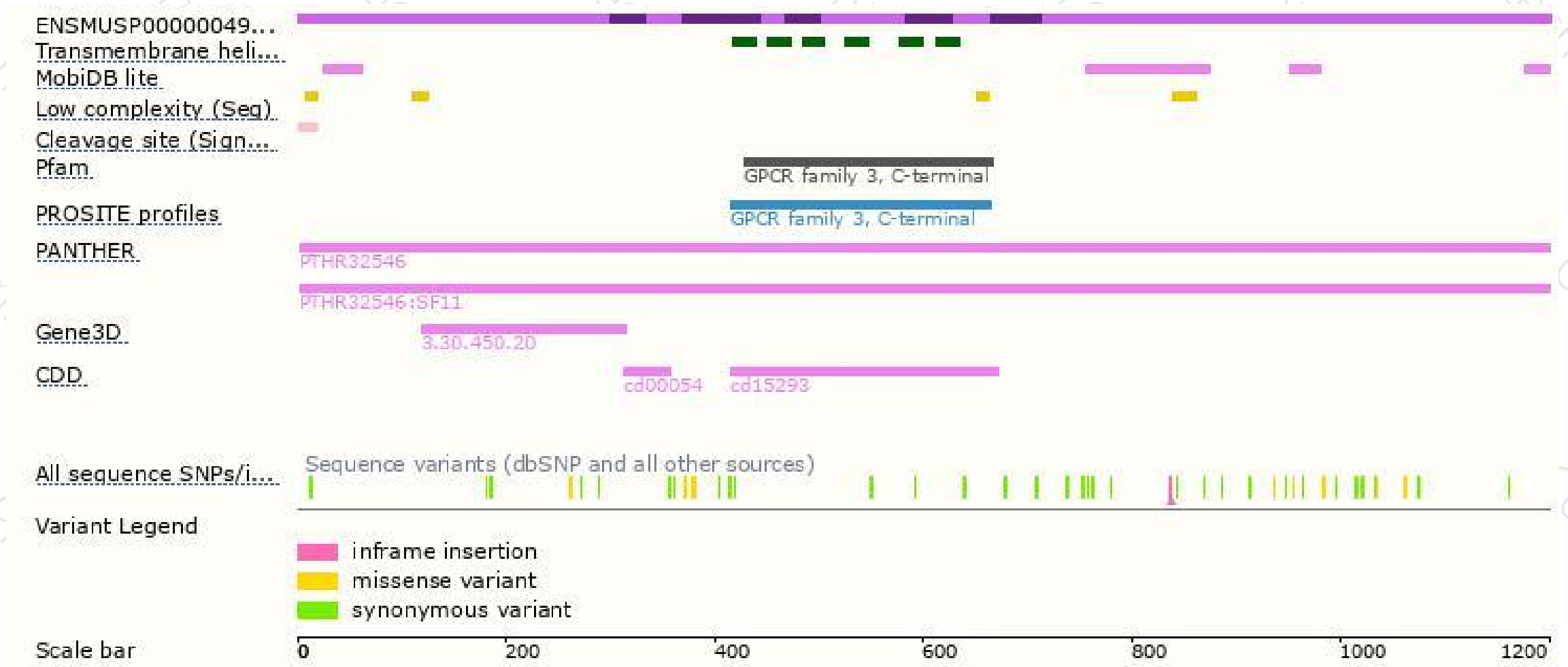




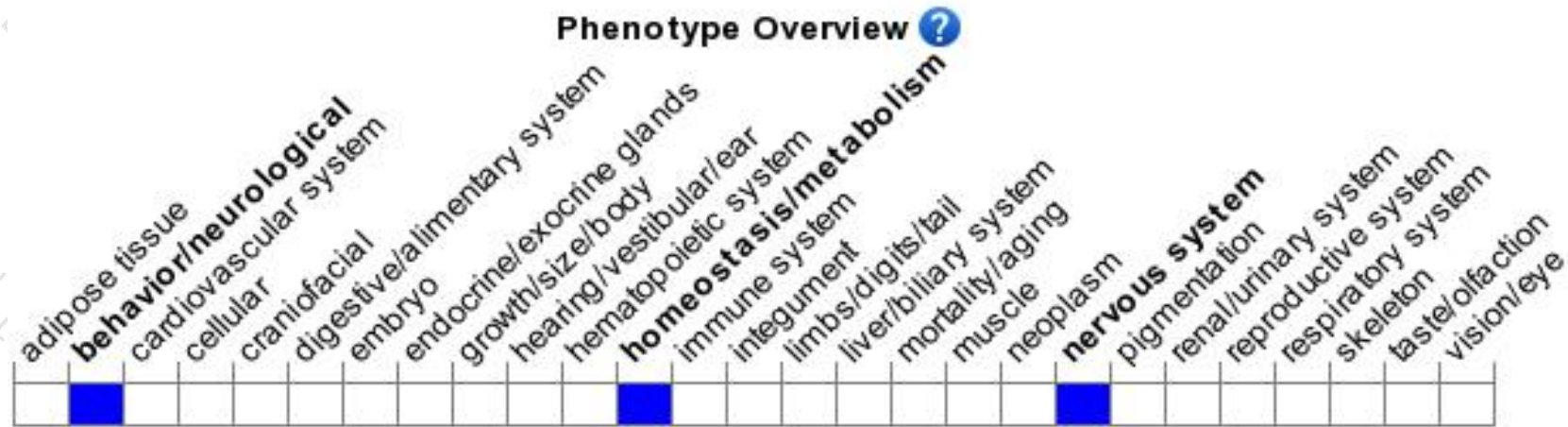
Genomic location distribution



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 exhibit antidepressant-like behaviors, reduced anxiety-related response and elevated AMPAR-signalling.

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

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