

Adcy8 Cas9-CKO Strategy

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Reviewer:

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Design Date:

2020-2-10

Project Overview

Project Name

Adcy8

Project type

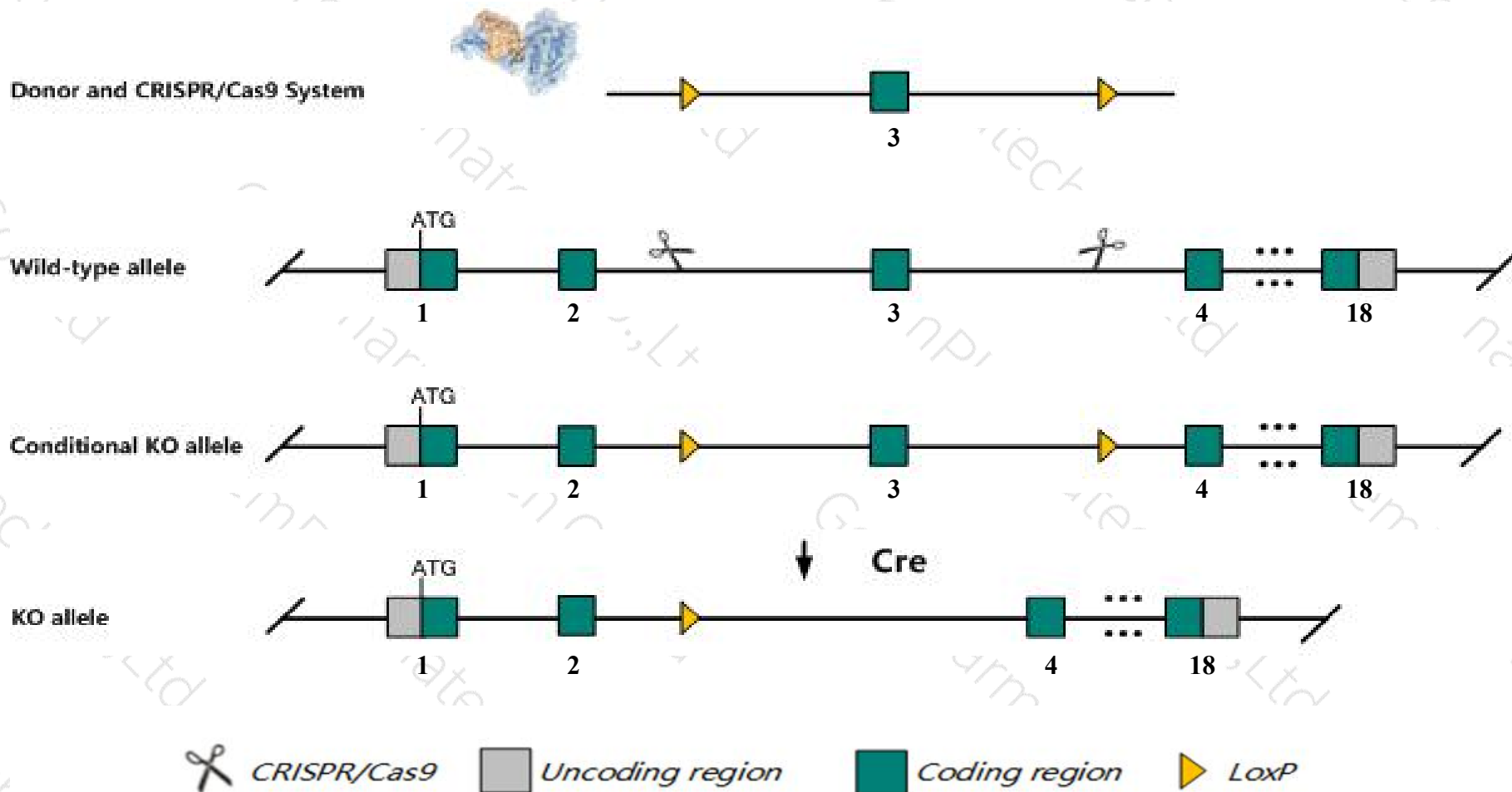
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Adcy8* gene. The schematic diagram is as follows:



Technical routes

- The *Adcy8* gene has 3 transcripts. According to the structure of *Adcy8* gene, exon3 of *Adcy8-201* (ENSMUST00000023007.6) transcript is recommended as the knockout region. The region contains 131bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Adcy8* 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 mutation of this gene results in reduced body size (in female animals only), reduced anxiety, and impaired long term depression (LTD).
- This strategy may affect the regulation function of *Gm21798* gene.
- The *Adcy8* gene is located on the Chr15. 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)

Adcy8 adenylate cyclase 8 [*Mus musculus* (house mouse)]

Gene ID: 11514, updated on 26-Nov-2019

Summary

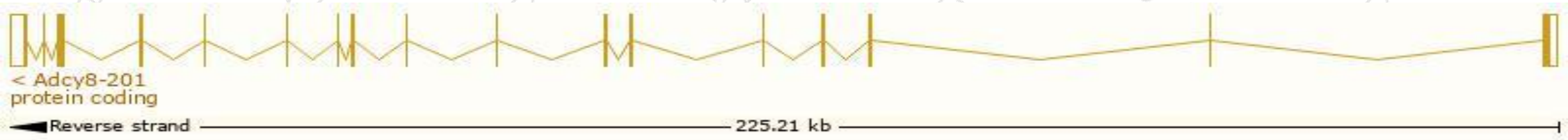
Official Symbol	Adcy8 provided by MGI
Official Full Name	adenylate cyclase 8 provided by MGI
Primary source	MGI:MGI:1341110
See related	Ensembl:ENSMUSG00000022376
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AC8; AW060868
Expression	Biased expression in lung adult (RPKM 13.1), genital fat pad adult (RPKM 11.8) and 8 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

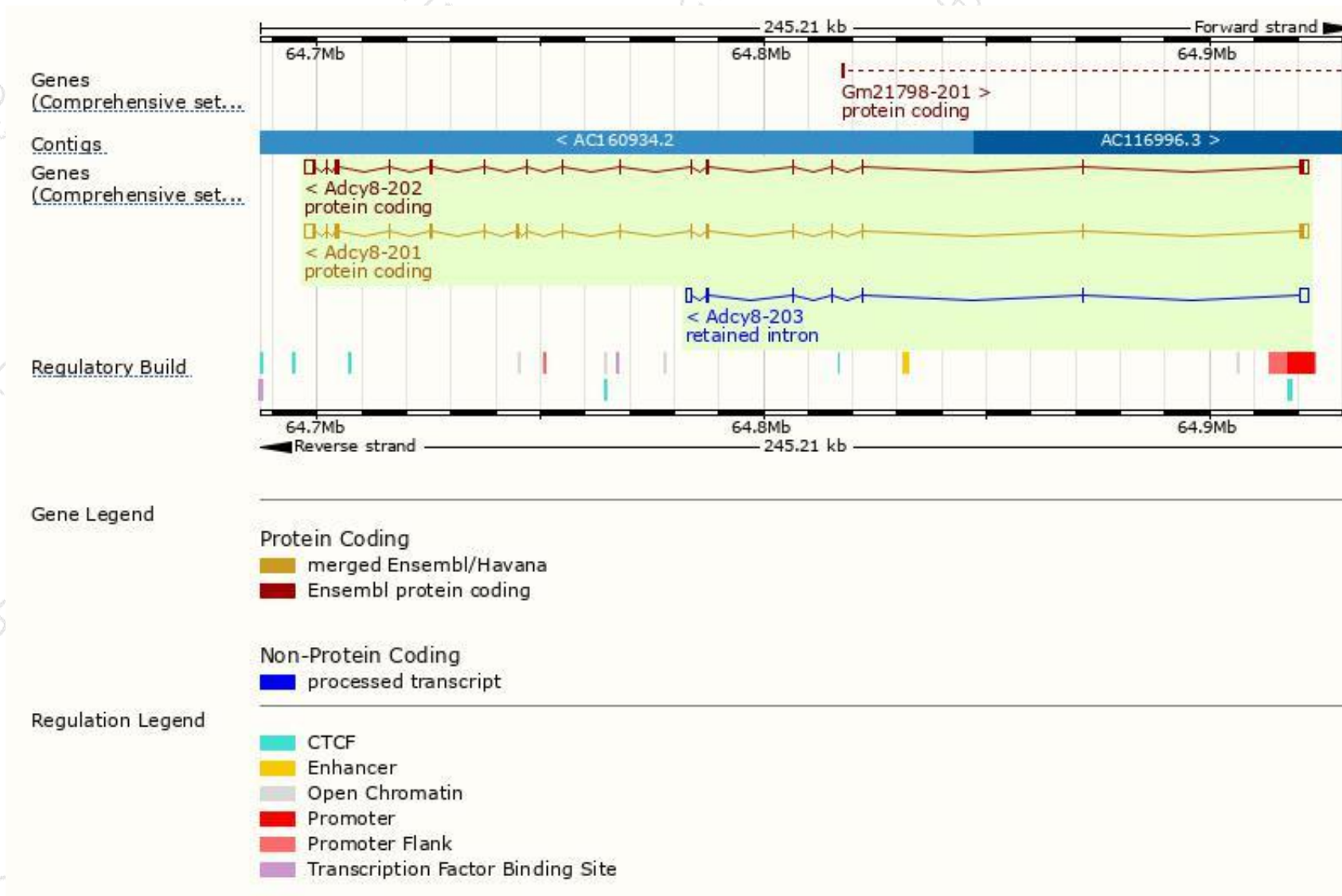
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Adcy8-201	ENSMUST00000023007.6	6990	1249aa	Protein coding	CCDS27506	P97490	TSL:1 GENCODE basic APPRIS P2
Adcy8-202	ENSMUST000000228014.1	6900	1219aa	Protein coding	-	A0A2I3BQ46	GENCODE basic APPRIS ALT2
Adcy8-203	ENSMUST000000228109.1	4233	No protein	Retained intron	-	-	

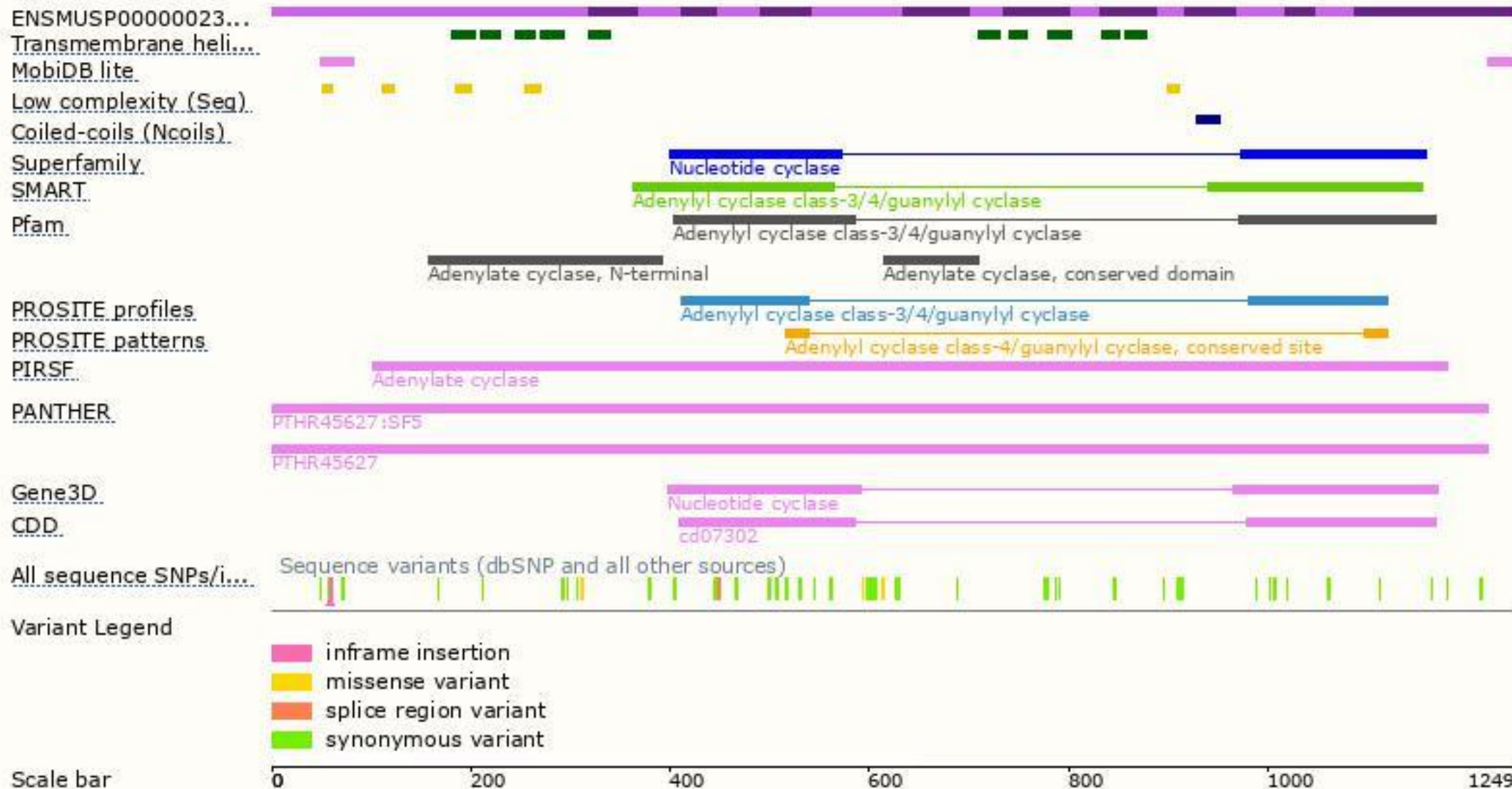
The strategy is based on the design of *Adcy8-201* transcript,The transcription is shown below



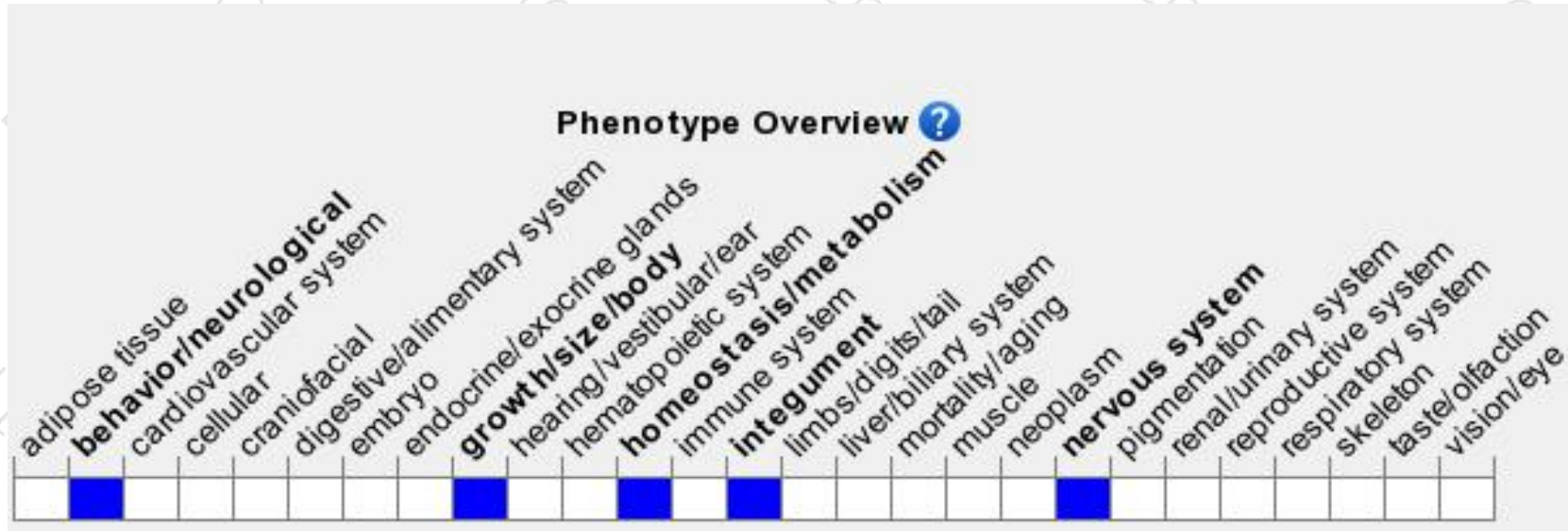
Genomic location distribution



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, Homozygous mutation of this gene results in reduced body size (in female animals only), reduced anxiety, and impaired long term depression (LTD).

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

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