

Htr7 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Htr7

Project type

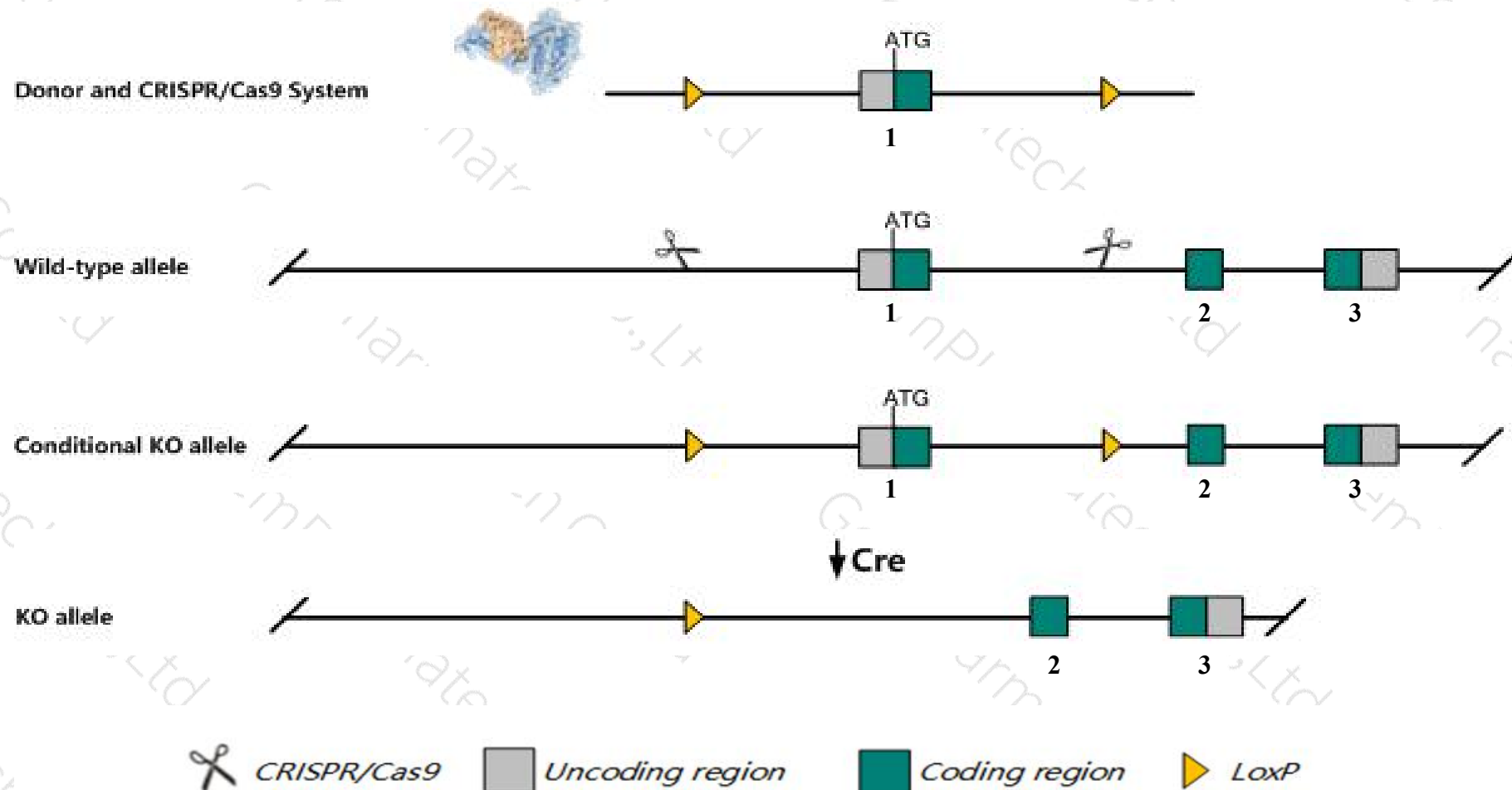
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Htr7* gene. The schematic diagram is as follows:



Technical routes

- The *Htr7* gene has 6 transcripts. According to the structure of *Htr7* gene, exon1 of *Htr7*-202 (ENSMUST00000164639.7) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Htr7* 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 display lower electrically- and chemically-induced seizure thresholds. Mice homozygous for a different knock-out allele show enhanced coordination and higher thermal nociceptive thresholds. Other nullizygous mutants fail to exhibit agonist-induced hypothermia.
- The *Htr7* gene is located on the Chr19. 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)

Htr7 5-hydroxytryptamine (serotonin) receptor 7 [*Mus musculus* (house mouse)]

Gene ID: 15566, updated on 14-Aug-2019

Summary

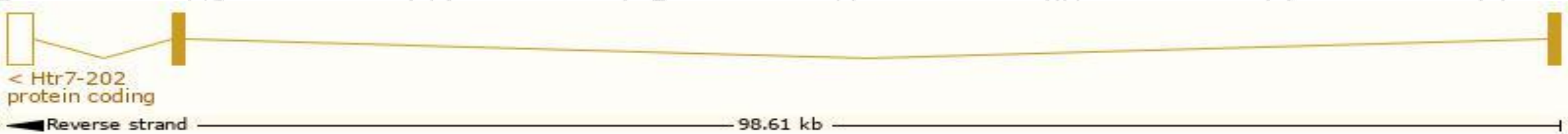
Official Symbol	Htr7 provided by MGI
Official Full Name	5-hydroxytryptamine (serotonin) receptor 7 provided by MGI
Primary source	MGI:MGI:99841
See related	Ensembl:ENSMUSG00000024798
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	5-HT7; 5-HT-X
Expression	Biased expression in CNS E18 (RPKM 2.3), cortex adult (RPKM 1.5) and 8 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

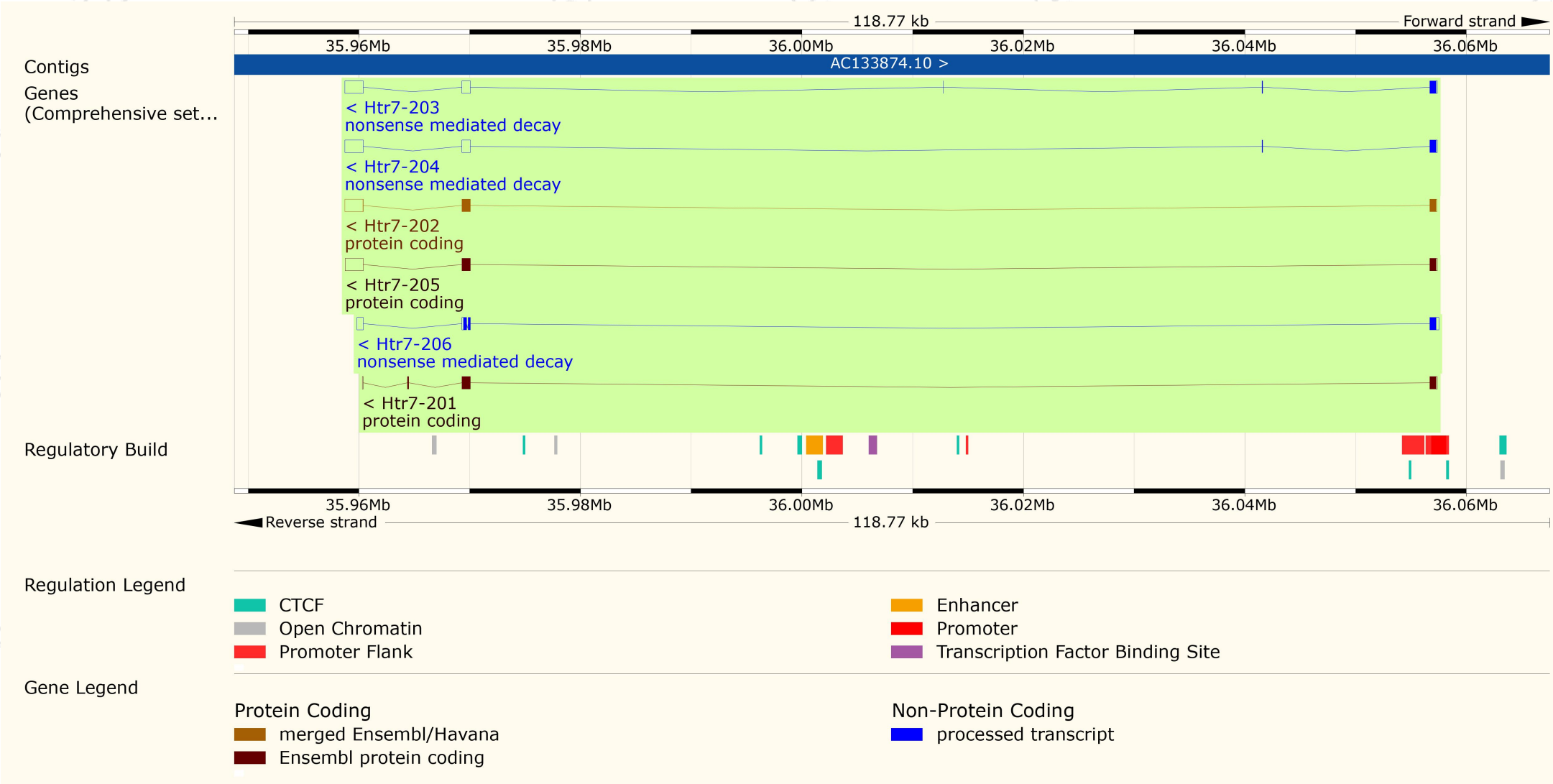
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Htr7-202	ENSMUST00000164639.7	3057	448aa	Protein coding	CCDS29769	P32304	TSL:1 GENCODE basic APPRIS P2
Htr7-201	ENSMUST00000099505.3	1606	470aa	Protein coding	CCDS84436	B6VJS3	TSL:5 GENCODE basic
Htr7-205	ENSMUST00000166074.1	3079	435aa	Protein coding	-	B6VJS2	TSL:5 GENCODE basic APPRIS ALT1
Htr7-203	ENSMUST00000164781.1	3155	198aa	Nonsense mediated decay	-	E9Q4Q7	TSL:1
Htr7-204	ENSMUST00000165215.7	3135	198aa	Nonsense mediated decay	-	E9Q4Q7	TSL:1
Htr7-206	ENSMUST00000170360.1	1990	344aa	Nonsense mediated decay	-	E9Q1X2	TSL:5

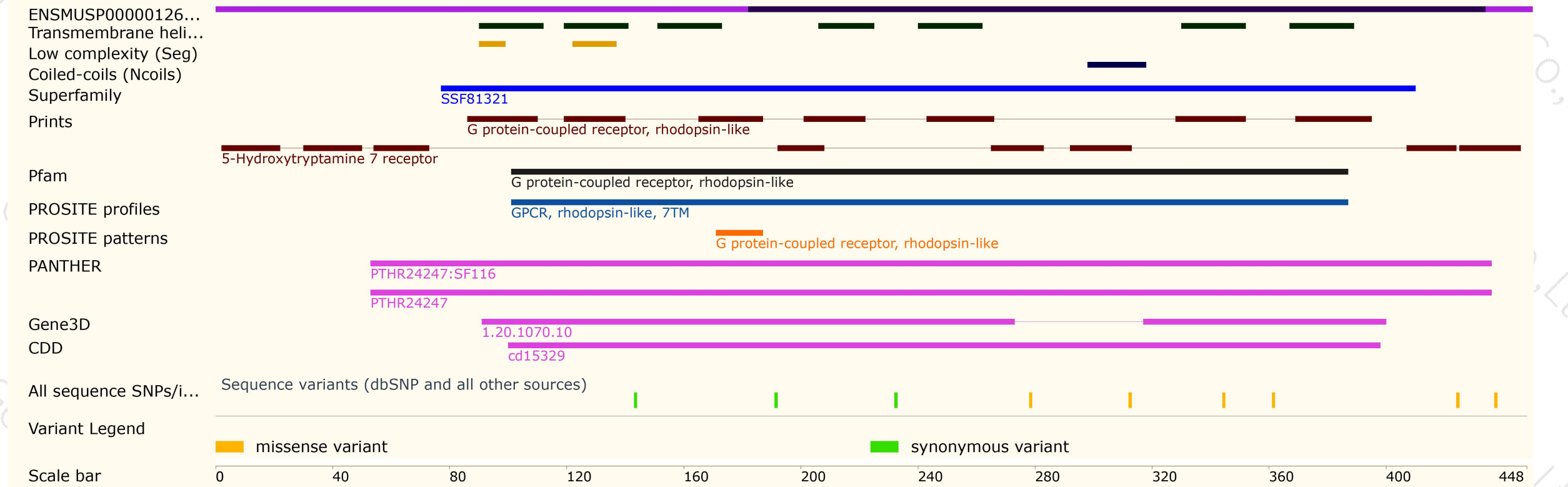
The strategy is based on the design of *Htr7-202* transcript,The transcription is shown below



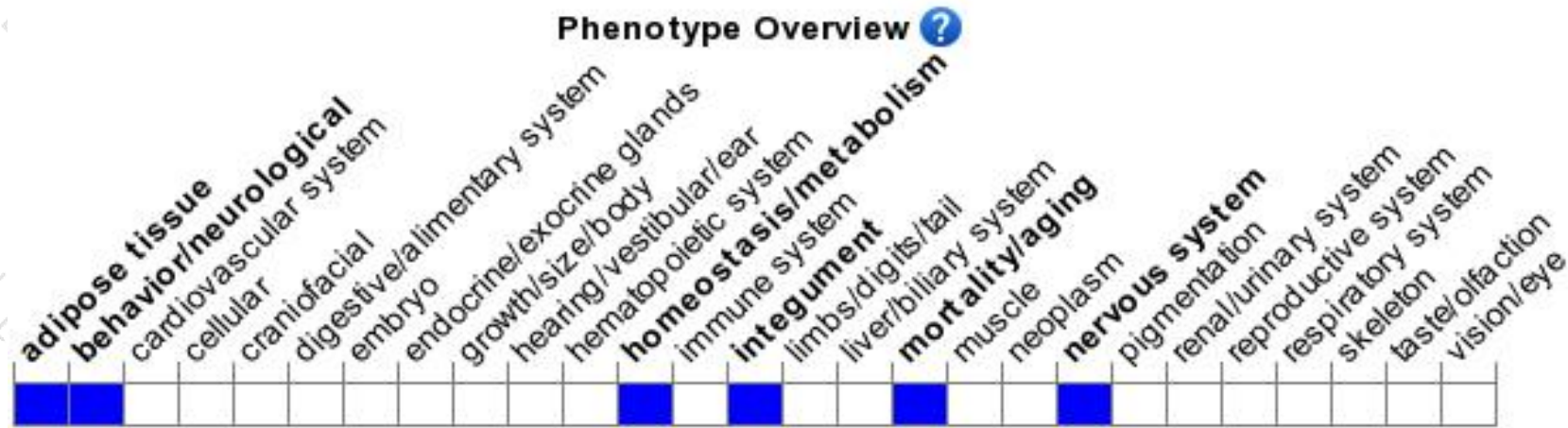
Genomic location distribution



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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