

Acpp Cas9-CKO Strategy

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Project Overview

Project Name

Acpp

Project type

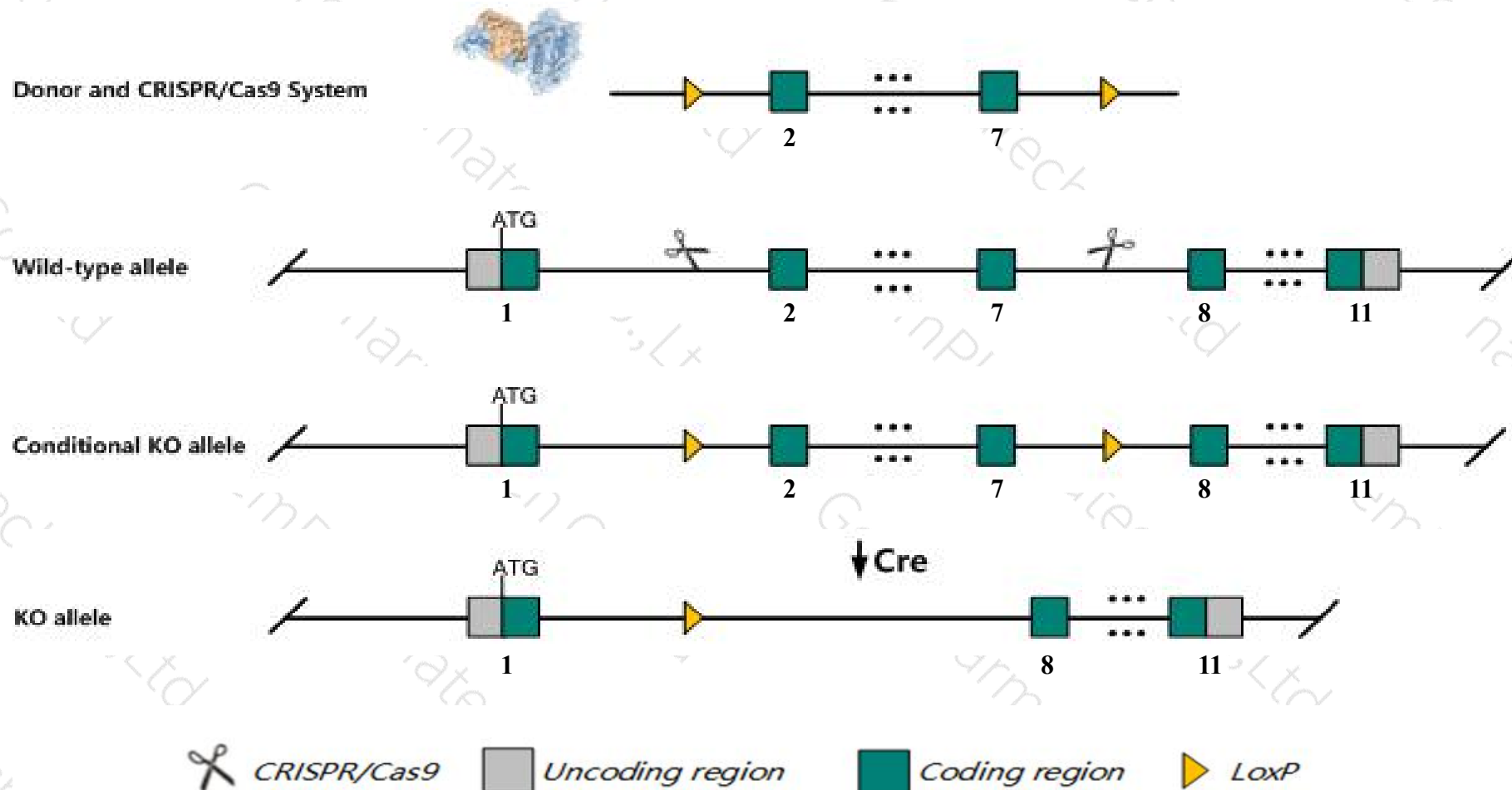
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



Technical routes

- The *Acpp* gene has 6 transcripts. According to the structure of *Acpp* gene, exon2-exon7 of *Acpp*-201 (ENSMUST00000062723.13) transcript is recommended as the knockout region. The region contains 661bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Acpp* 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 decreased thermal nociceptive threshold and mechanical allodynia in chronic inflammatory and nerve injury pain models.
- The *Acpp* gene is located on the Chr9. 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)

Acpp acid phosphatase, prostate [Mus musculus (house mouse)]

Gene ID: 56318, updated on 31-Jan-2019

Summary



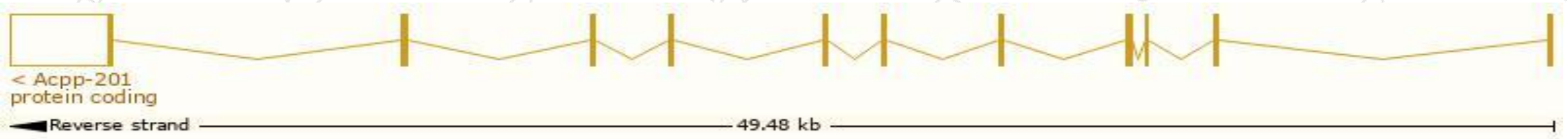
Official Symbol	Acpp provided by MGI
Official Full Name	acid phosphatase, prostate provided by MGI
Primary source	MGI:MGI:1928480
See related	Ensembl:ENSMUSG00000032561
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	5'-NT, A030005E02Rik, FRAP, Lap, PAP, Ppal
Expression	Broad expression in genital fat pad adult (RPKM 3.4), adrenal adult (RPKM 2.3) and 17 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

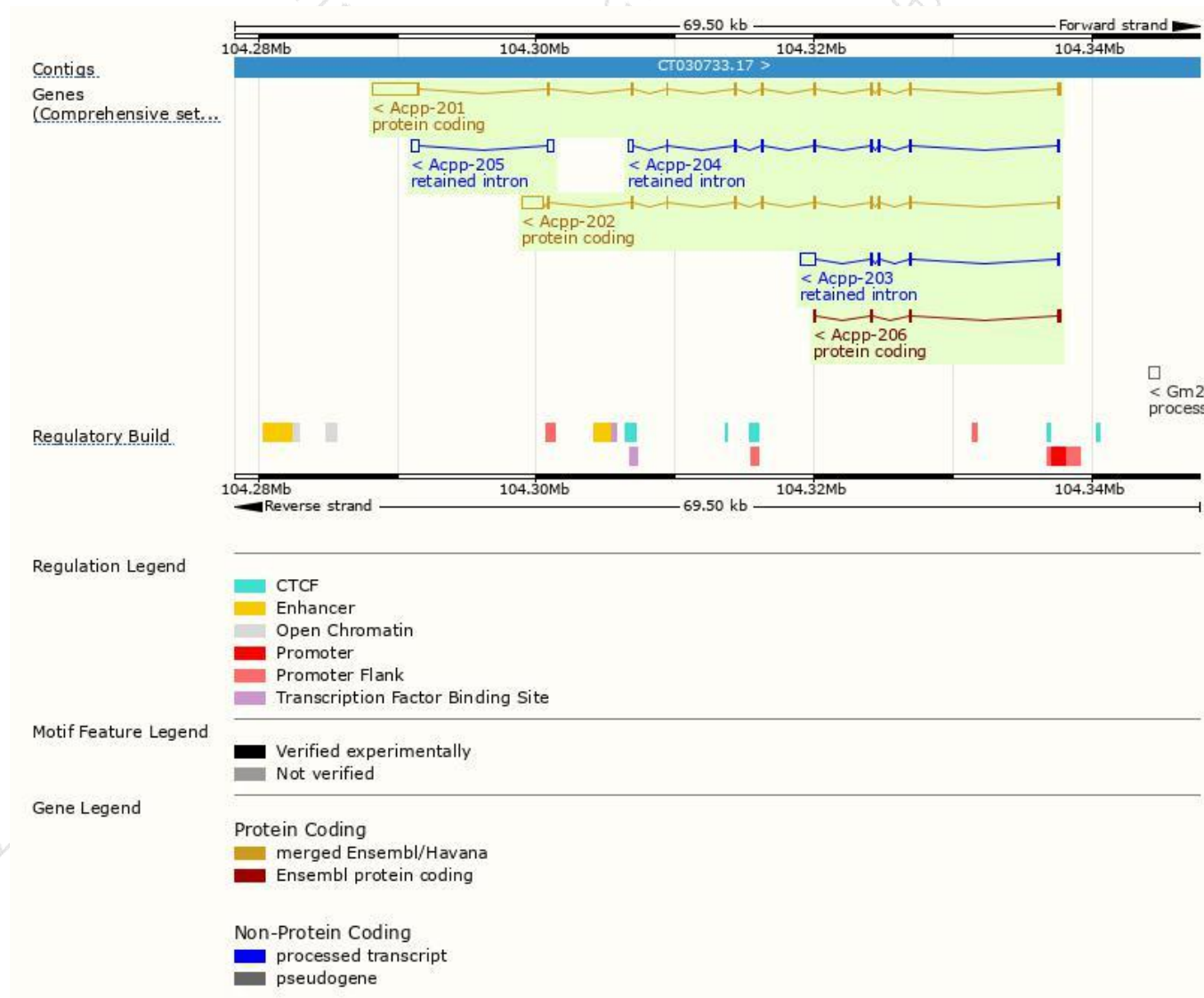
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Acpp-201	ENSMUST00000062723.13	4483	417aa	Protein coding	CCDS23460	Q8CE08	TSL:1 GENCODE basic APPRIS P3
Acpp-202	ENSMUST00000112590.2	2652	381aa	Protein coding	CCDS40750	Q8CE08	TSL:1 GENCODE basic APPRIS ALT2
Acpp-206	ENSMUST00000215852.1	554	155aa	Protein coding	-	A0A1L1SUT0	CDS 3' incomplete TSL:5
Acpp-203	ENSMUST00000125800.1	1507	No protein	Retained intron	-	-	TSL:1
Acpp-204	ENSMUST00000128635.7	1199	No protein	Retained intron	-	-	TSL:1
Acpp-205	ENSMUST00000131084.1	891	No protein	Retained intron	-	-	TSL:2

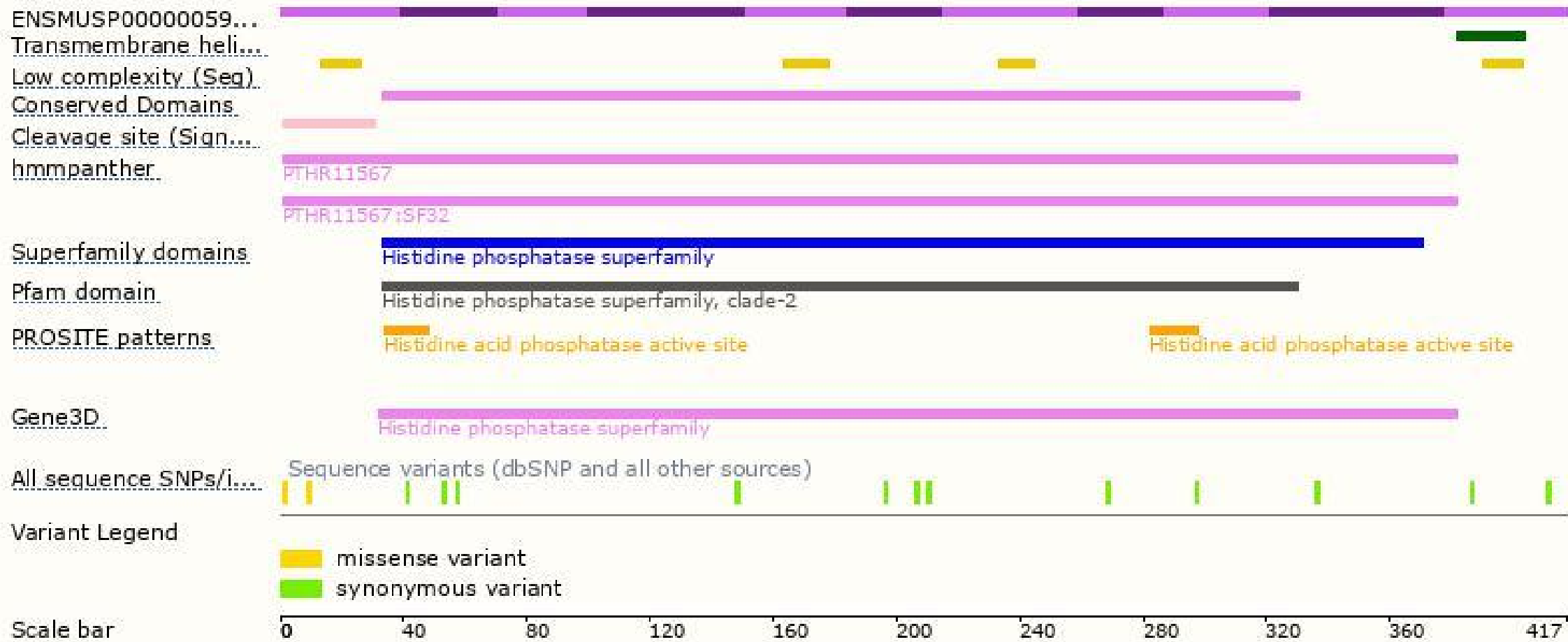
The strategy is based on the design of *Acpp-201* transcript,The transcription is shown below



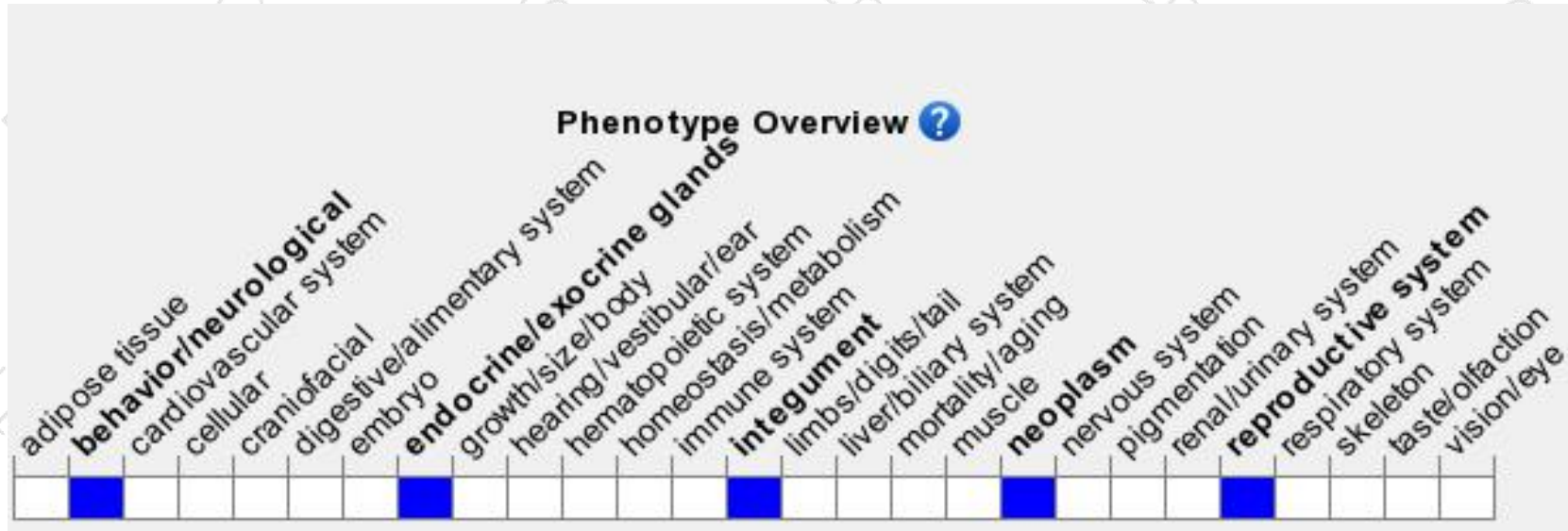
Genomic location distribution



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 decreased thermal nociceptive threshold and mechanical allodynia in chronic inflammatory and nerve injury pain models.

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

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