

Mpdz Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Mpdz

Project type

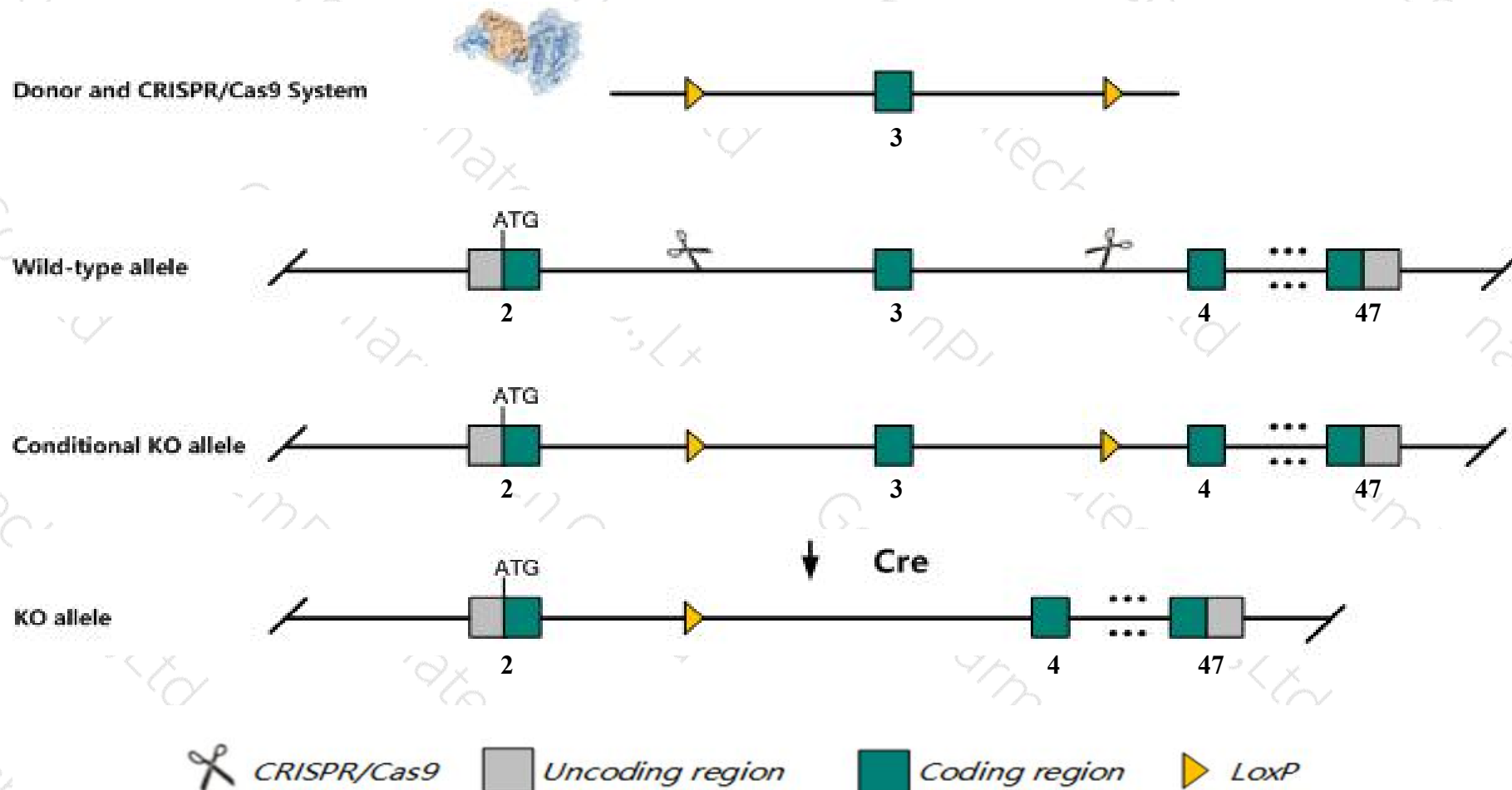
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Mpdz* gene has 16 transcripts. According to the structure of *Mpdz* gene, exon3 of *Mpdz-201* (ENSMUST00000102830.9) transcript is recommended as the knockout region. The region contains 167bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Mpdz* 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, Mutant heterozygous mice are more sensitive to ethanol withdrawal effects and consume less alcohol than controls.
- Transcript *Mpdz*-207/209/210/211/213 CDS are incomplete, whether they will be affected is unknown.
- The *Mpdz* gene is located on the Chr4. 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)

Mpdz multiple PDZ domain protein [*Mus musculus* (house mouse)]

Gene ID: 17475, updated on 24-Oct-2019

Summary

Official Symbol Mpdz provided by MGI

Official Full Name multiple PDZ domain protein provided by MGI

Primary source MGI:MGI:1343489

See related [Ensembl:ENSMUSG00000028402](#)

Gene type protein coding

RefSeq status VALIDATED

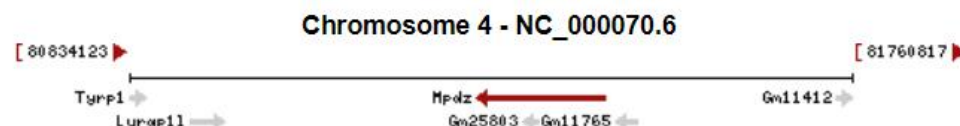
Organism [Mus musculus](#)

Lineage Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus

Also known as MUPP1; AI225843; B930003D11Rik

Expression Broad expression in CNS E11.5 (RPKM 10.3), limb E14.5 (RPKM 8.8) and 22 other tissues [See more](#)

Orthologs [human](#) [all](#)

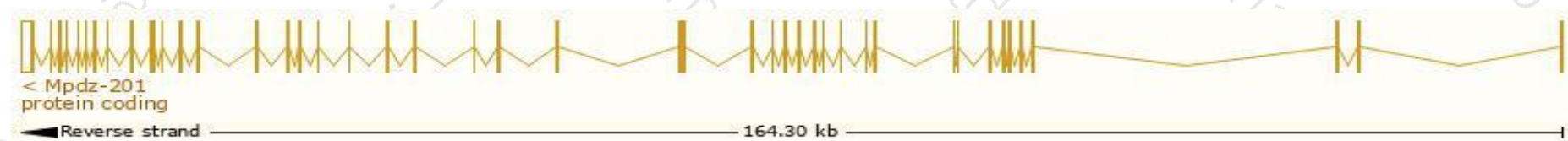


Transcript information (Ensembl)

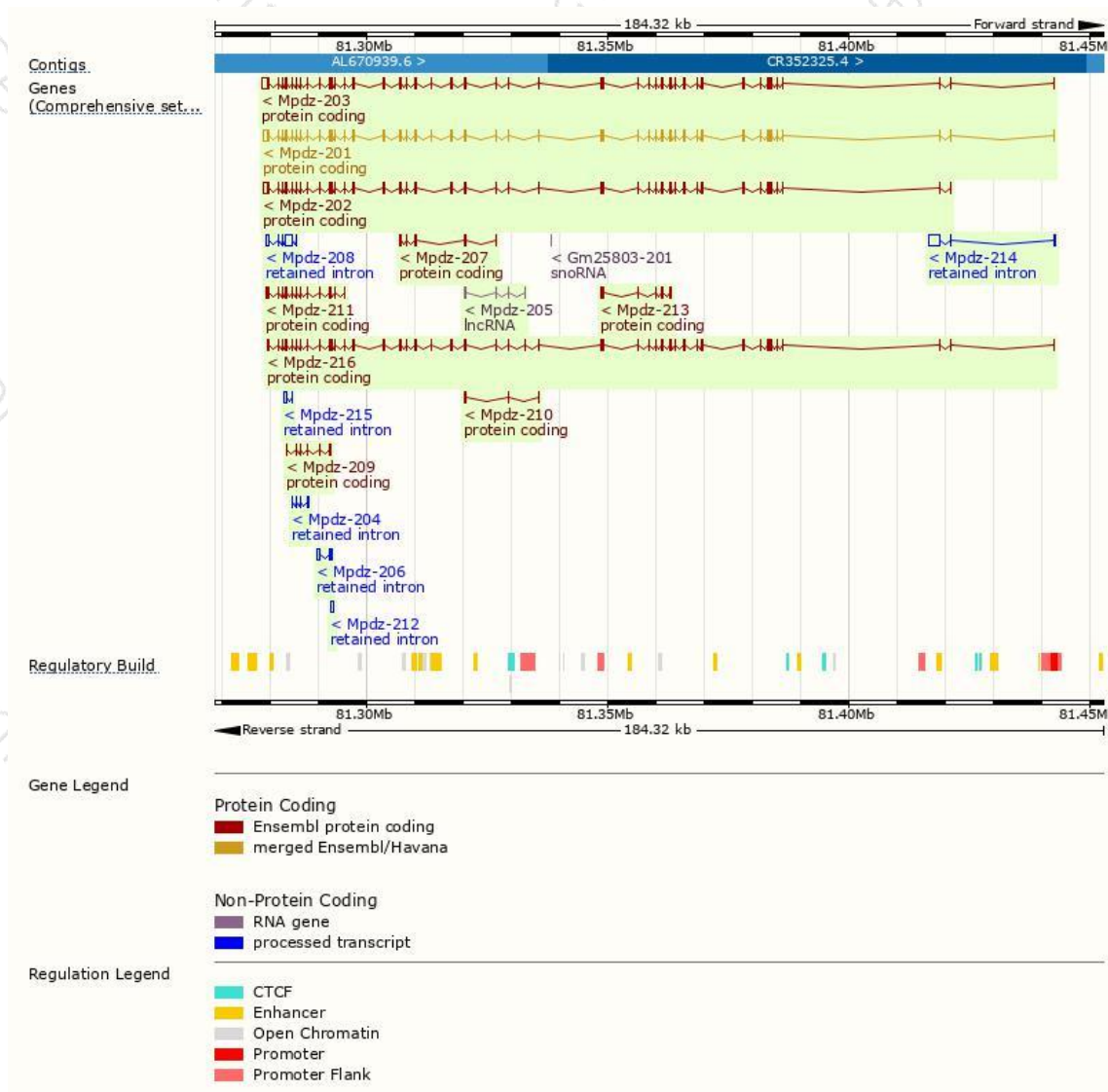
The gene has 16 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Mpdz-201	ENSMUST00000102830.9	7512	2055aa	ENSMUSP00000099894.3	Protein coding	CCDS18292	Q8VBX6	TSL:1 GENCODE basic APPRIS P2
Mpdz-203	ENSMUST00000107262.7	7518	2056aa	ENSMUSP00000102883.1	Protein coding	-	D3YUX2	TSL:5 GENCODE basic APPRIS ALT2
Mpdz-202	ENSMUST00000107258.8	7241	2022aa	ENSMUSP00000102879.2	Protein coding	-	Q8VBX6	TSL:1 GENCODE basic APPRIS ALT2
Mpdz-216	ENSMUST00000220807.1	6295	2069aa	ENSMUSP00000152533.1	Protein coding	-	B2RQR2	TSL:5 GENCODE basic APPRIS ALT2
Mpdz-211	ENSMUST00000134726.7	1773	495aa	ENSMUSP00000116830.1	Protein coding	-	A3KG84	CDS 5' incomplete TSL:5
Mpdz-213	ENSMUST00000141995.2	1045	348aa	ENSMUSP00000118283.1	Protein coding	-	I7HJS5	CDS 5' and 3' incomplete TSL:5
Mpdz-207	ENSMUST00000131197.3	806	269aa	ENSMUSP00000122498.2	Protein coding	-	F7D0H8	CDS 5' and 3' incomplete TSL:5
Mpdz-209	ENSMUST00000131547.1	628	209aa	ENSMUSP00000116767.1	Protein coding	-	A3KG83	CDS 5' and 3' incomplete TSL:5
Mpdz-210	ENSMUST00000134572.1	416	138aa	ENSMUSP00000122308.1	Protein coding	-	A3KG82	CDS 5' and 3' incomplete TSL:5
Mpdz-214	ENSMUST00000142273.1	2749	No protein	-	Retained intron	-	-	TSL:1
Mpdz-208	ENSMUST00000131418.1	2215	No protein	-	Retained intron	-	-	TSL:2
Mpdz-206	ENSMUST00000129732.1	754	No protein	-	Retained intron	-	-	TSL:2
Mpdz-204	ENSMUST00000124805.1	670	No protein	-	Retained intron	-	-	TSL:3
Mpdz-215	ENSMUST00000156441.7	571	No protein	-	Retained intron	-	-	TSL:3
Mpdz-212	ENSMUST00000140425.1	468	No protein	-	Retained intron	-	-	TSL:3
Mpdz-205	ENSMUST00000125288.7	441	No protein	-	lncRNA	-	-	TSL:5

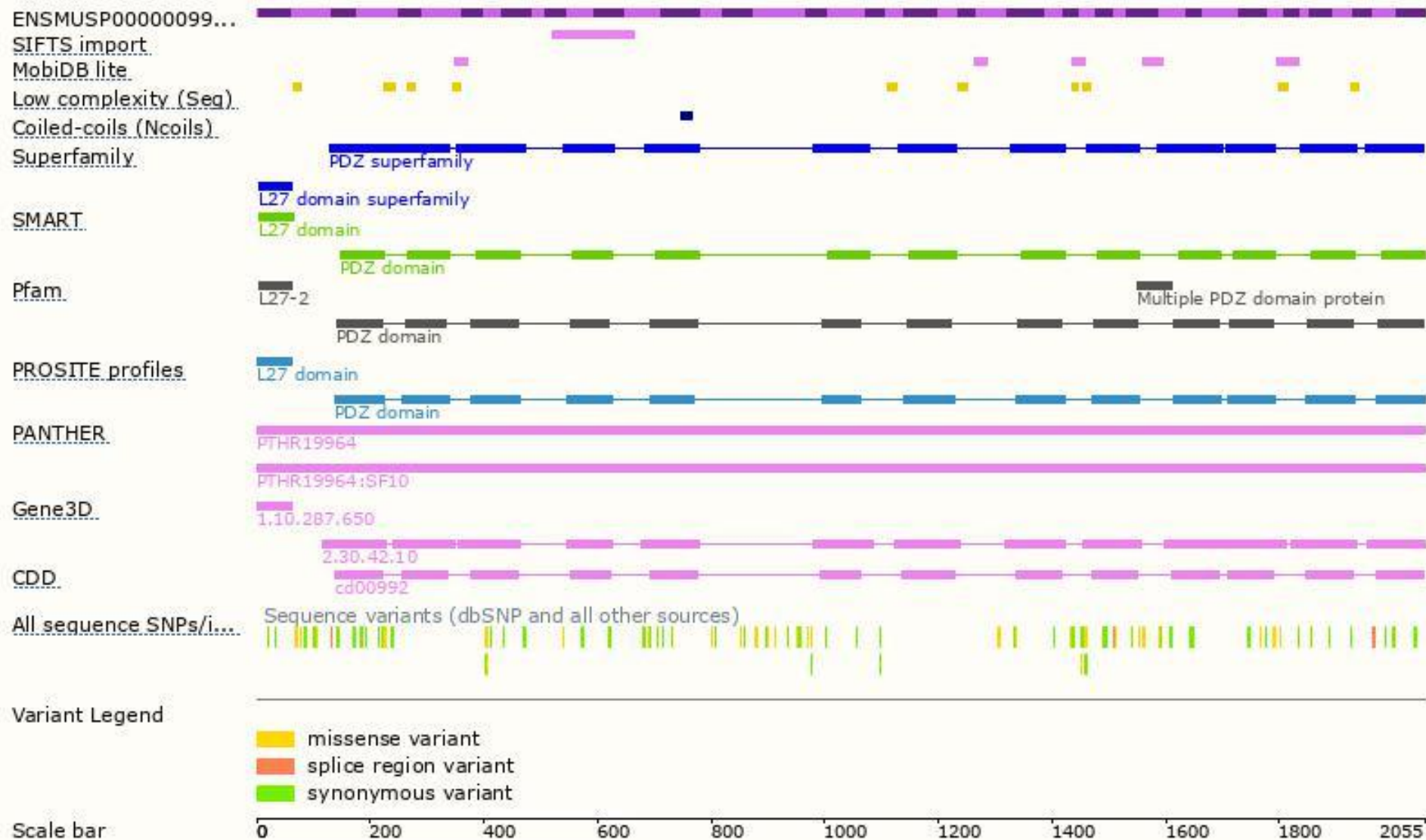
The strategy is based on the design of *Mpdz-201* transcript,The transcription is shown below



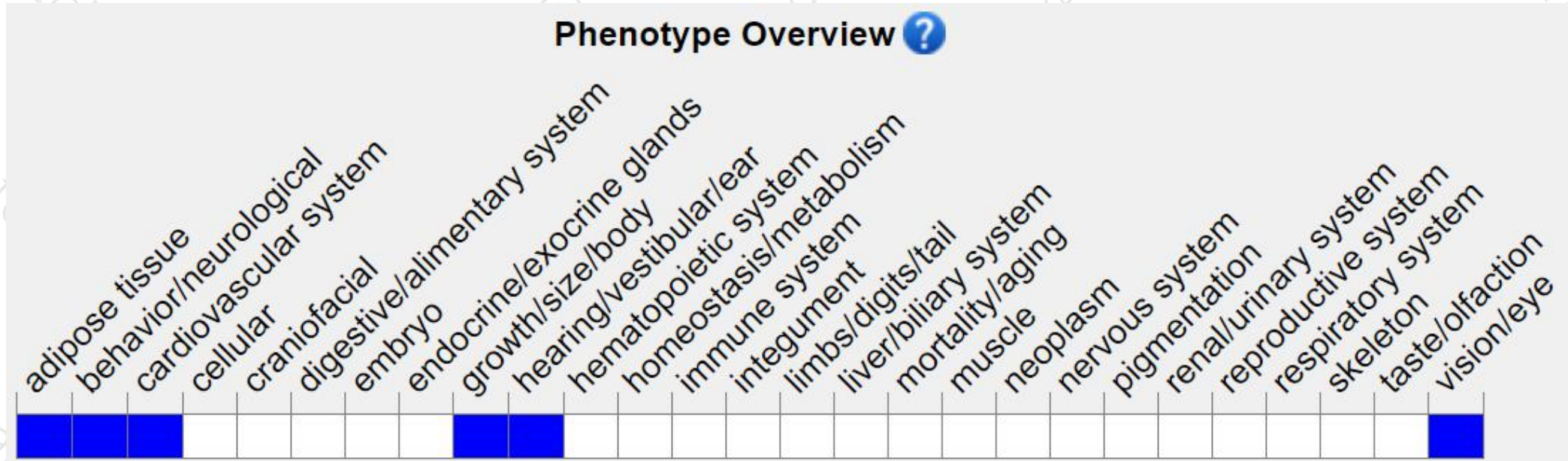
Genomic location distribution



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, Mutant heterozygous mice are more sensitive to ethanol withdrawal effects and consume less alcohol than controls.

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

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