

Pcdh1 Cas9-CKO Strategy

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Project Overview

Project Name

Pcdh1

Project type

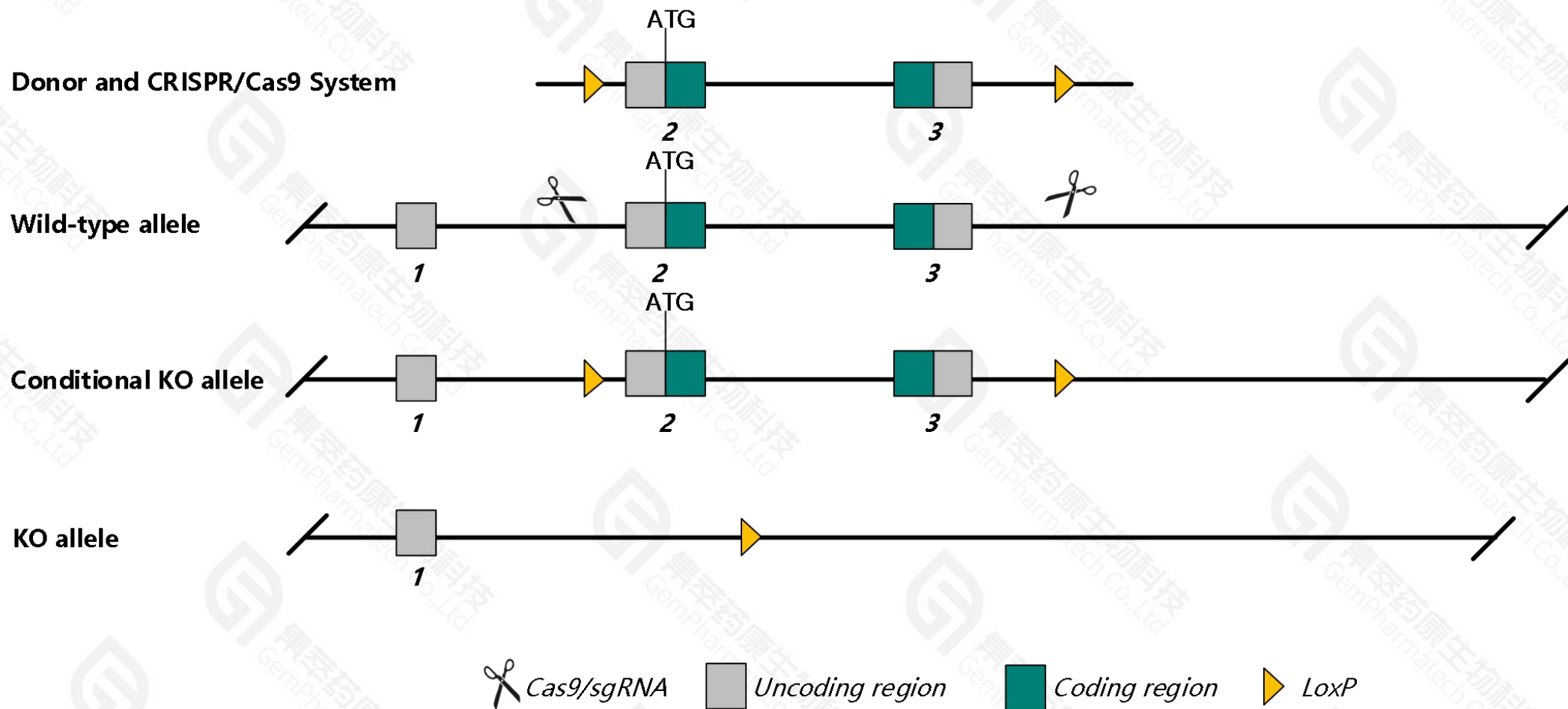
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pcdh1* gene. The schematic diagram is as follows:



- The *Pcdh1* gene has 6 transcripts. According to the structure of *Pcdh1* gene, exon2-exon3 of *Pcdh1-201*(ENSMUST00000057185.13) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Pcdh1* 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.

- The *Pcdh1* gene is located on the Chr18. 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)

Pcdh1 protocadherin 1 [Mus musculus (house mouse)]

Gene ID: 75599, updated on 17-Dec-2020

Summary



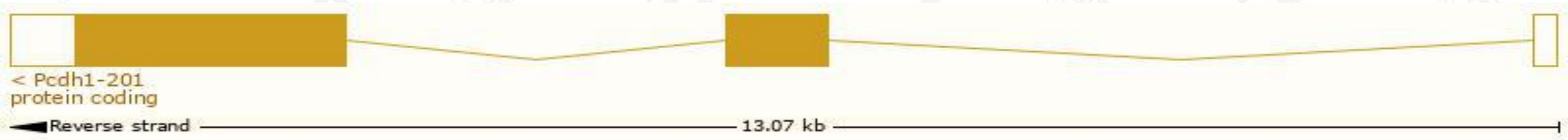
Official Symbol	Pcdh1 provided by MGI
Official Full Name	protocadherin 1 provided by MGI
Primary source	MGI:MGI:104692
See related	Ensembl:ENSMUSG00000051375
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2010005A06Rik, AI585920
Expression	Broad expression in lung adult (RPKM 22.2), small intestine adult (RPKM 16.0) and 22 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

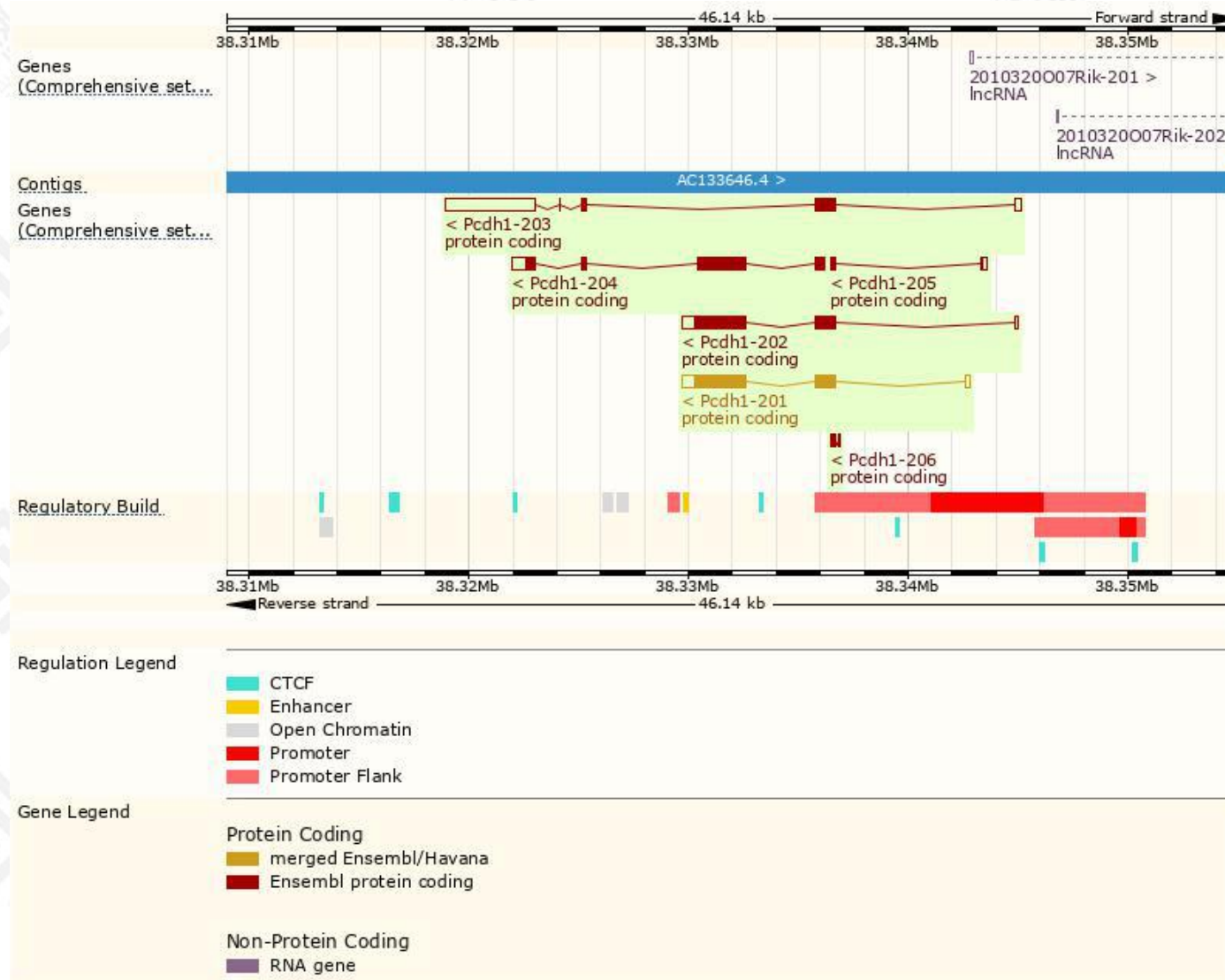
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pcdh1-201	ENSMUST00000057185.13	3902	1038aa	Protein coding	CCDS29197		TSL:1 , GENCODE basic , APPRIS P1 ,
Pcdh1-202	ENSMUST00000159405.3	3880	1038aa	Protein coding	CCDS29197		TSL:5 , GENCODE basic , APPRIS P1 ,
Pcdh1-203	ENSMUST00000160721.8	5416	360aa	Protein coding	-		TSL:5 , GENCODE basic ,
Pcdh1-204	ENSMUST00000161701.3	3889	1077aa	Protein coding	-		CDS 5' incomplete , TSL:5 ,
Pcdh1-205	ENSMUST00000193828.2	434	60aa	Protein coding	-		CDS 3' incomplete , TSL:3 ,
Pcdh1-206	ENSMUST00000194312.2	234	45aa	Protein coding	-		CDS 3' incomplete , TSL:3 ,

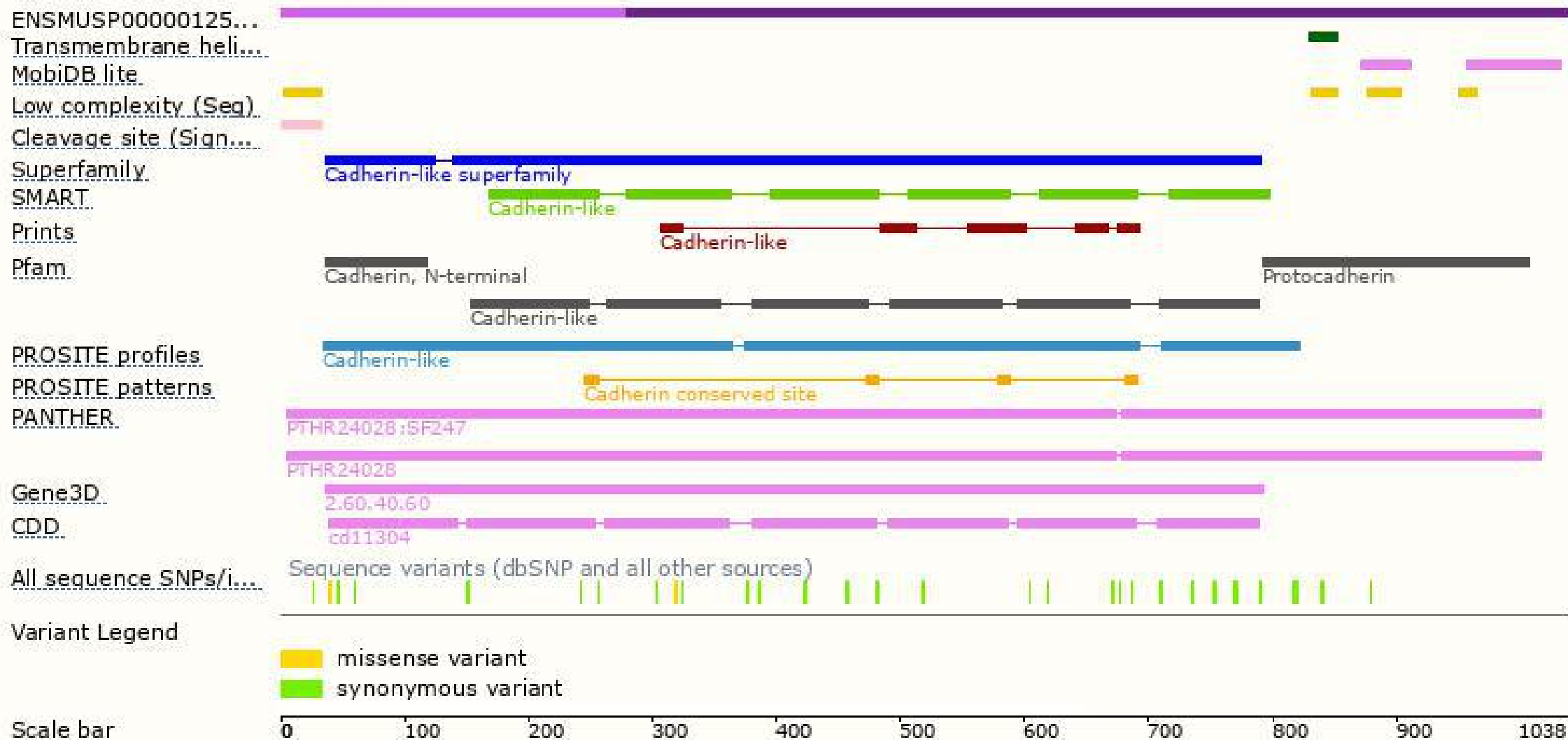
The strategy is based on the design of *Pcdh1-201* transcript,the transcription is shown below:



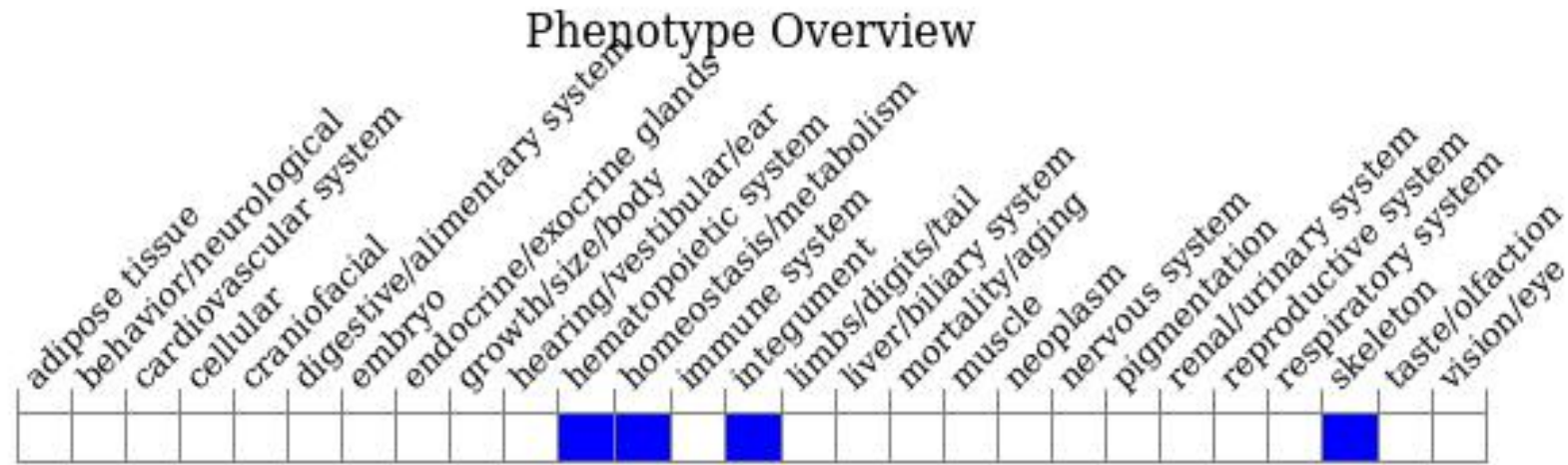
Genomic location distribution



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/>).

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