

# ***Gpr87 Cas9-KO Strategy***

**Designer:**

**Huan Wang**

**Design Date:**

**2019-7-22**

# Project Overview

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**Project Name**

***Gpr87***

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**Project type**

**Cas9-KO**

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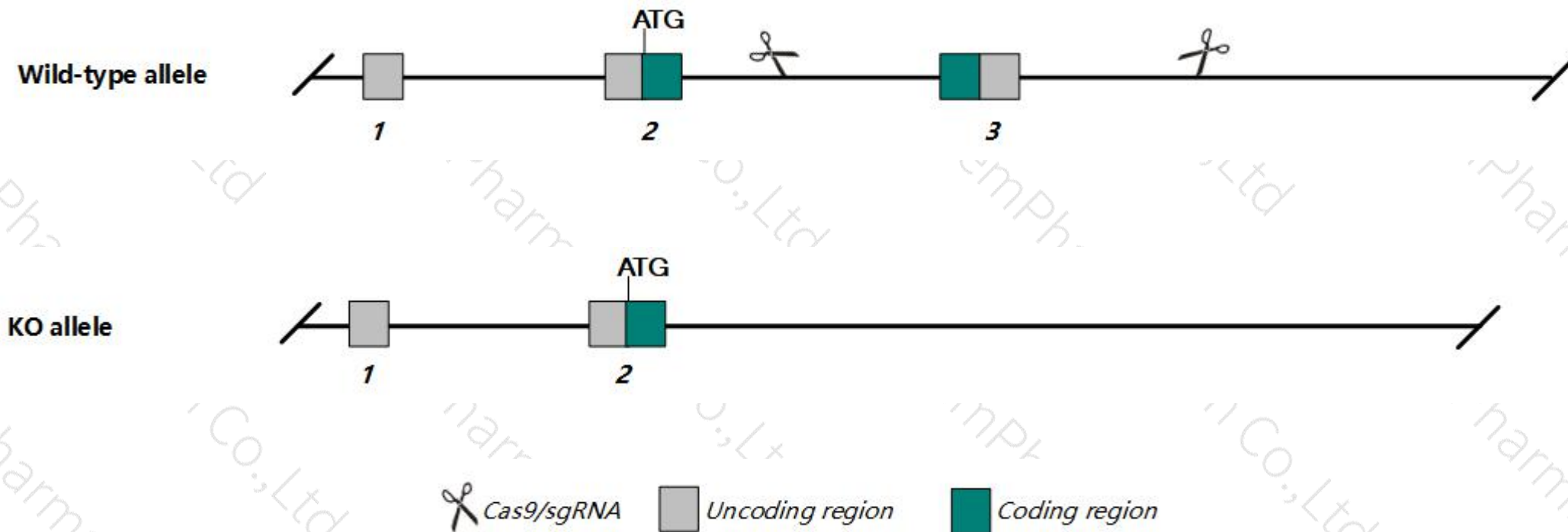
**Strain background**

**C57BL/6JGpt**

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# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gpr87* gene. The schematic diagram is as follows:



# Technical routes

- The *Gpr87* gene has 3 transcript. According to the structure of *Gpr87* gene, exon3 of *Gpr87*-203 transcript is recommended as the knockout region. The region contains most 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 *Gpr87* gene. The brief process is as follows: gRNA was transcribed in vitro. Cas9 and gRNA 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.

- According to the existing MGI data , Mice homozygous for a null allele exhibit decreased mean vertebral and femoral bone measurements.
- The KO region contains intron of the *Med12* gene. Knockout the region may affect the function of *Med12* gene.
- The *Gpr87* gene is located on the Chr3. 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 the loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

# Gene information ( NCBI )

## Gpr87 G protein-coupled receptor 87 [ *Mus musculus* (house mouse) ]

Gene ID: 84111, updated on 8-Dec-2018

### Summary

Official Symbol	Gpr87 provided by <a href="#">MGI</a>
Official Full Name	G protein-coupled receptor 87 provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:1934133</a>
See related	<a href="#">Ensembl:ENSMUSG000000051431</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Biased expression in bladder adult (RPKM 4.8), limb E14.5 (RPKM 1.4) and 3 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

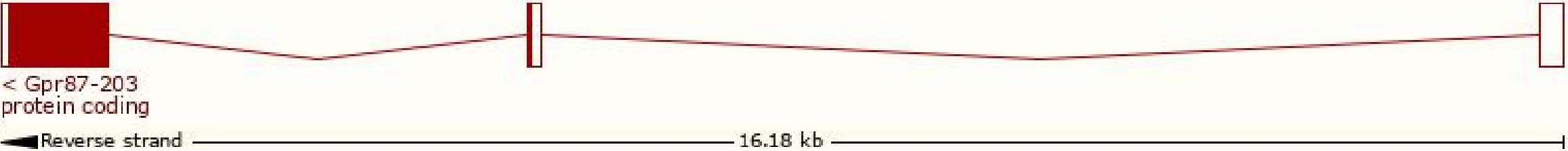


# Transcript information ( Ensembl )

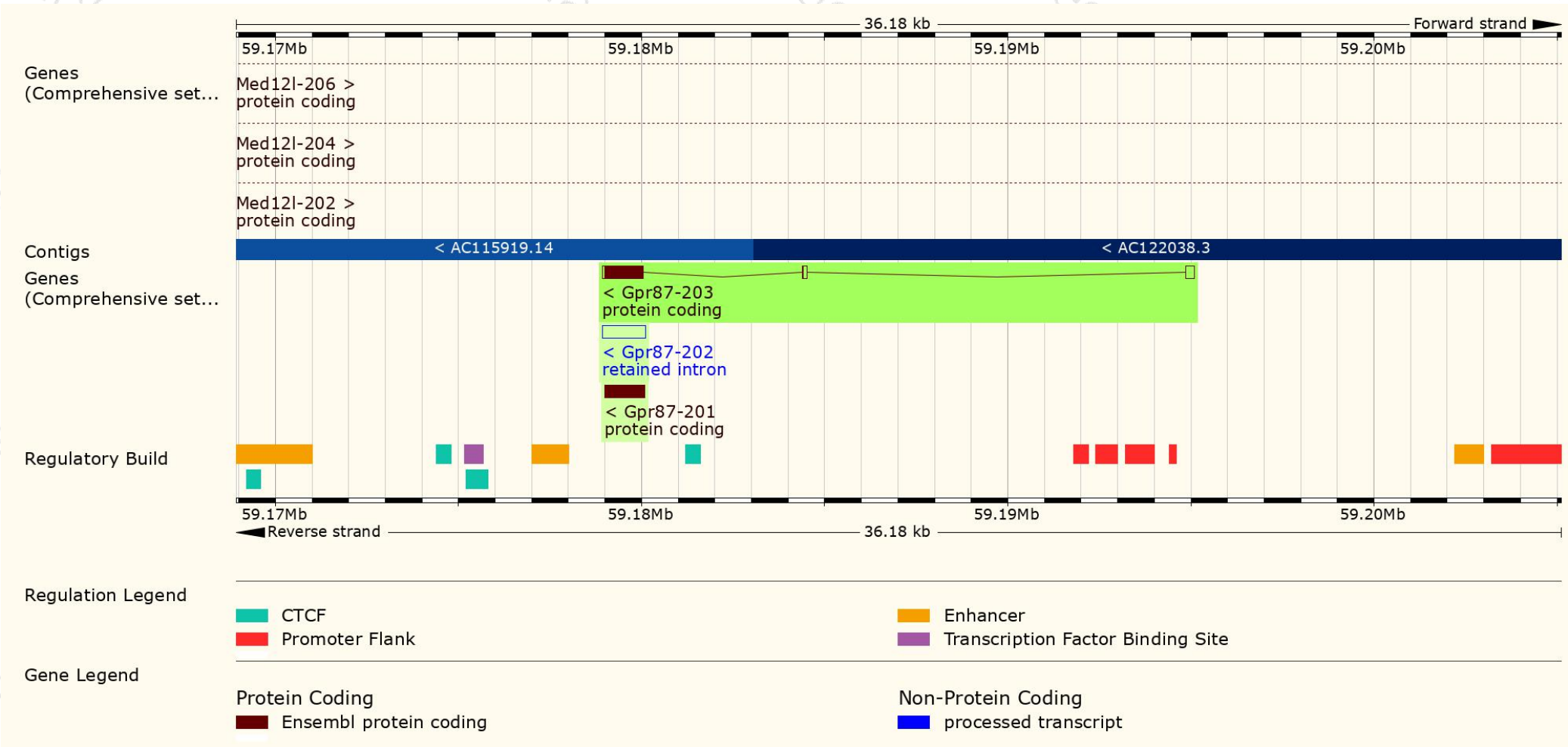
The gene has 3 transcripts, and all transcripts are shown below:

Show/hide columns (1 hidden)								Filter	
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	RefSeq	Flags	
Gpr87-203	<a href="#">ENSMUST00000200095.1</a>	1499	<a href="#">358aa</a>	Protein coding	<a href="#">CCDS79914</a>	<a href="#">Q99MT7</a>	<a href="#">NM_001302203</a> <a href="#">NP_001289132</a>	TSL:1	GENCODE basic APPRIS P2
Gpr87-201	<a href="#">ENSMUST00000056898.4</a>	1080	<a href="#">359aa</a>	Protein coding	-	<a href="#">Q059H2</a>	-	TSL:NA	GENCODE basic APPRIS ALT2
Gpr87-202	<a href="#">ENSMUST00000199833.1</a>	1192	No protein	Retained intron	-	-	-	TSL:NA	

The strategy is based on the design of *Gpr87-201* transcript,The transcription is shown below

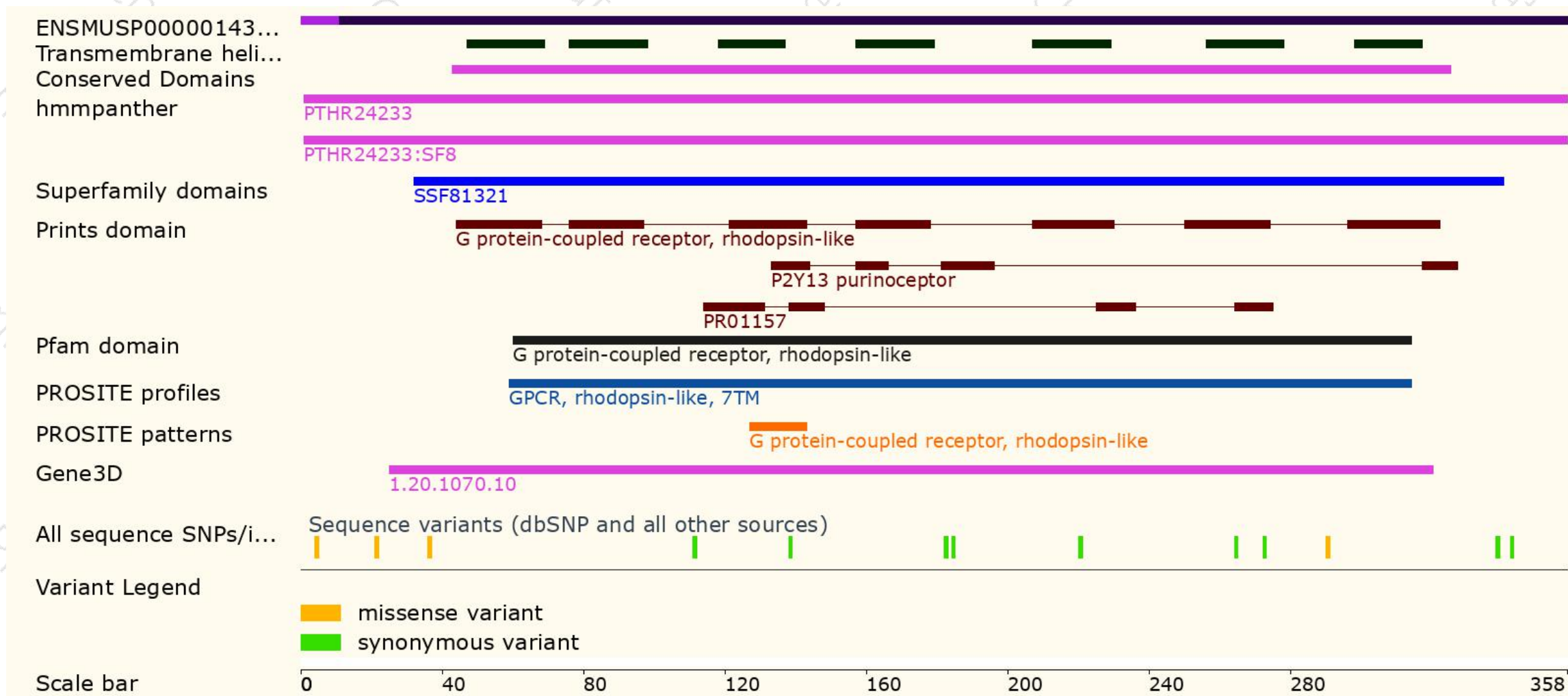


# Genomic location distribution

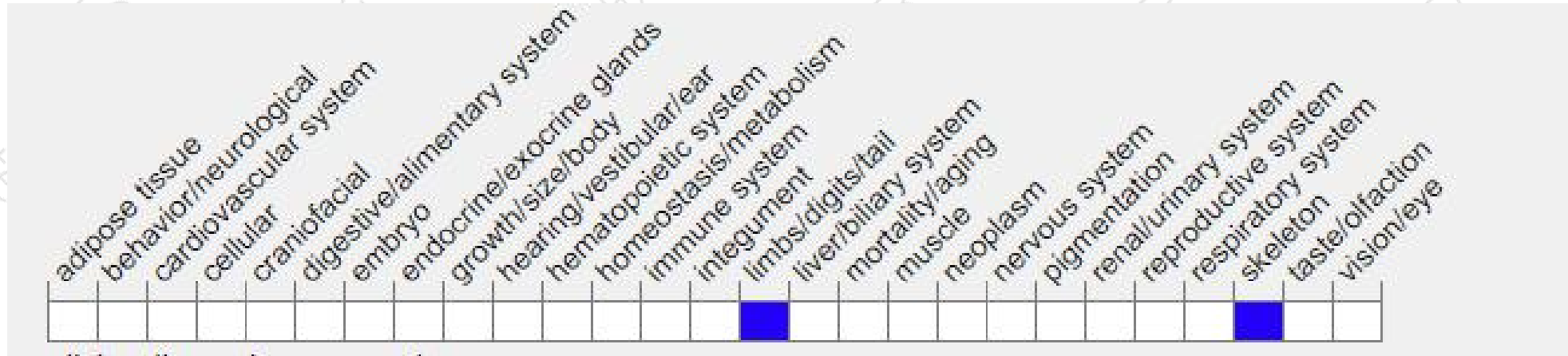




# Protein region



# Mouse phenotype description(MGI)



*Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>) .*

Mice homozygous for a null allele exhibit decreased mean vertebral and femoral bone measurements.

If you have any questions, you are welcome to inquire.  
Tel: 400-9660890



集萃药康生物科技  
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