

***Bach1* Cas9-KO Strategy**

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Project Overview

Project Name

Bach1

Project type

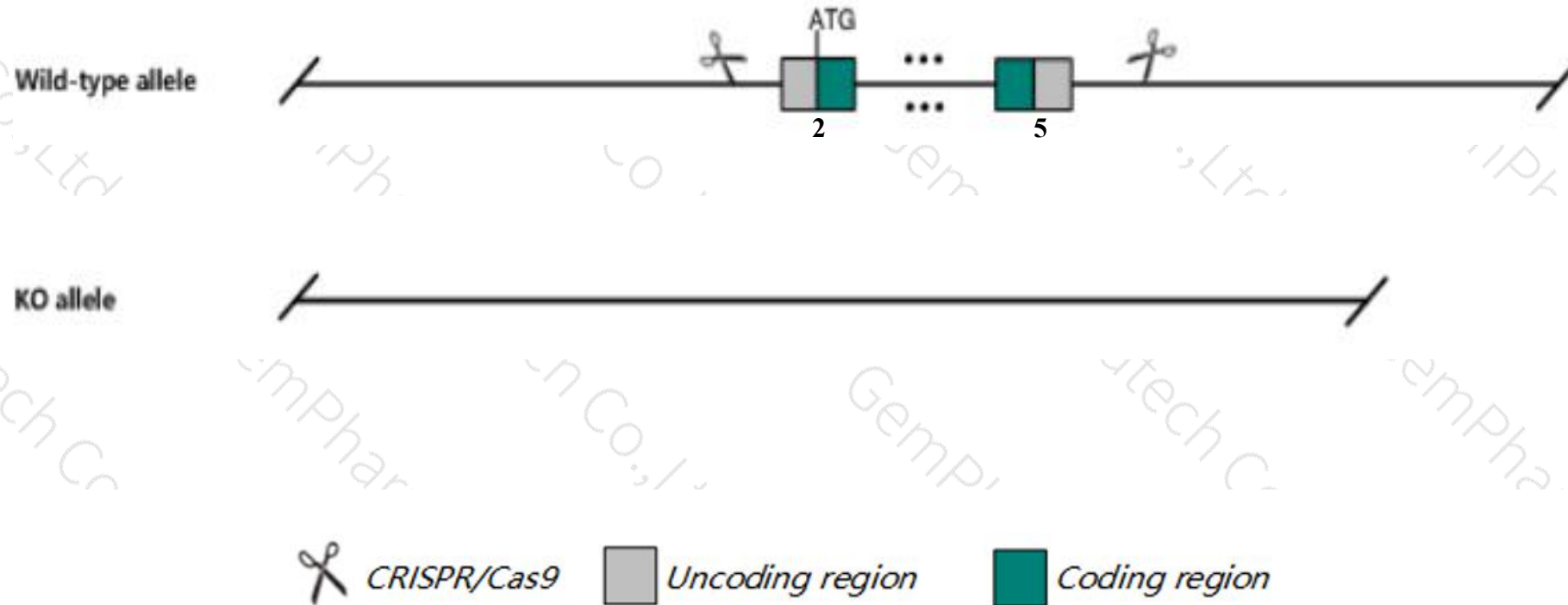
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Bach1* gene. The schematic diagram is as follows:



- The *Bach1* gene has 3 transcripts. According to the structure of *Bach1* gene, exon2-exon5 of *Bach1*-201(ENSMUST00000026703.5) 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 *Bach1* gene. The brief process is as follows: CRISPR/Cas9 system 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, homozygous null mice are healthy and fertile with no gross abnormalities but express elevated levels of HMOX1.
- The *Bach1* gene is located on the Chr16. 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 gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Bach1 BTB and CNC homology 1, basic leucine zipper transcription factor 1 [Mus musculus (house mouse)]

Gene ID: 12013, updated on 13-Mar-2020

Summary



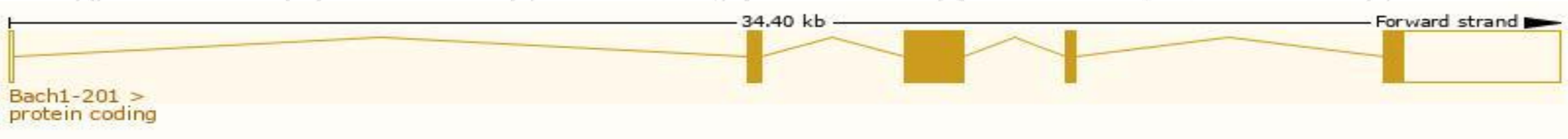
Official Symbol	Bach1 provided by MGI
Official Full Name	BTB and CNC homology 1, basic leucine zipper transcription factor 1 provided by MGI
Primary source	MGI:MGI:894680
See related	Ensembl:ENSMUSG00000025612
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	6230421P05Rik, AI323795
Expression	Ubiquitous expression in thymus adult (RPKM 12.9), large intestine adult (RPKM 9.3) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

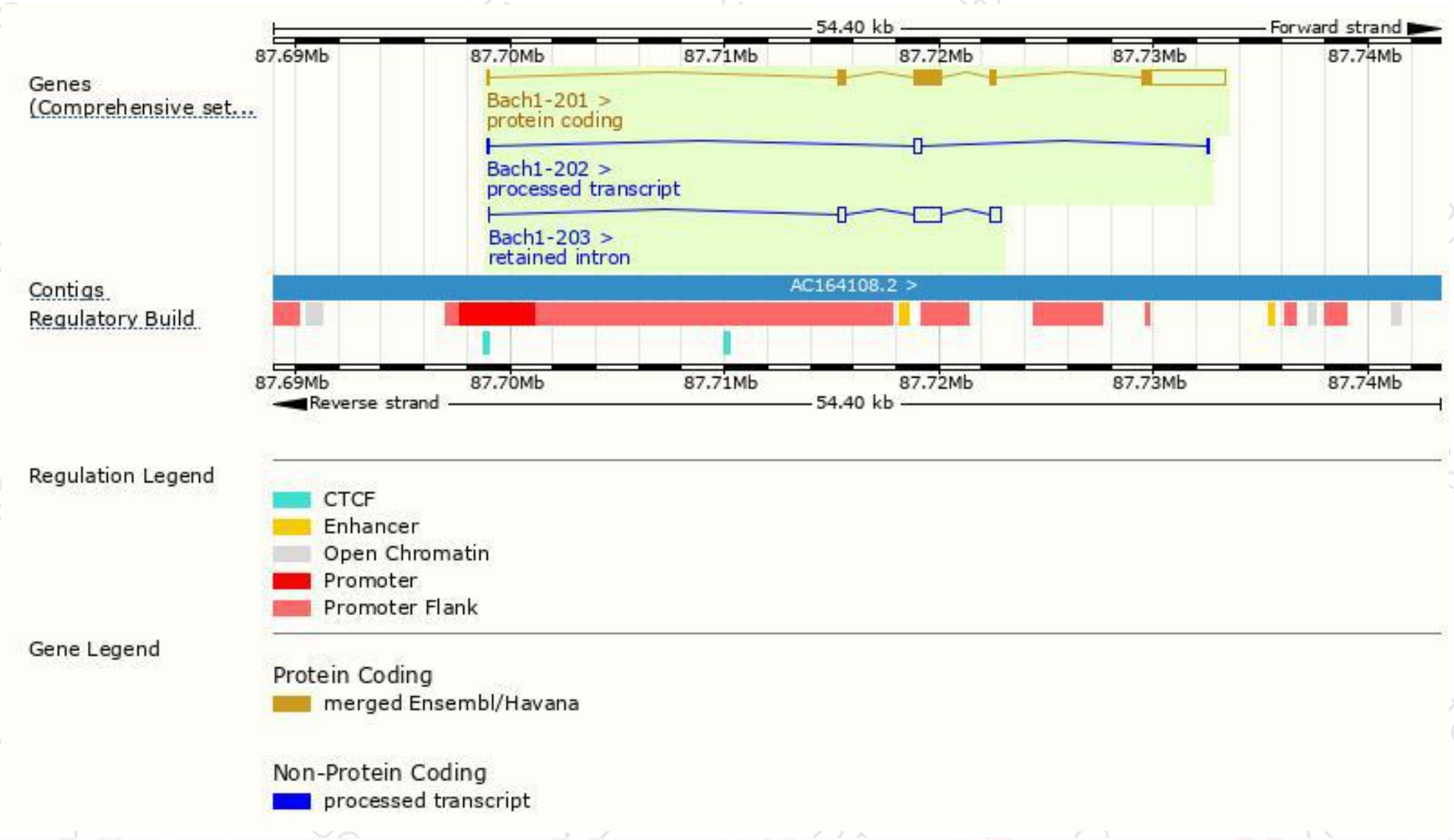
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Bach1-201	ENSMUST00000026703.5	5867	739aa	Protein coding	CCDS28293	P97302 Q3URL4	TSL:1 GENCODE basic APPRIS P1
Bach1-202	ENSMUST00000151046.1	545	No protein	Processed transcript	-	-	TSL:5
Bach1-203	ENSMUST00000156958.1	2210	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Bach1-201* transcript,the transcription is shown below:



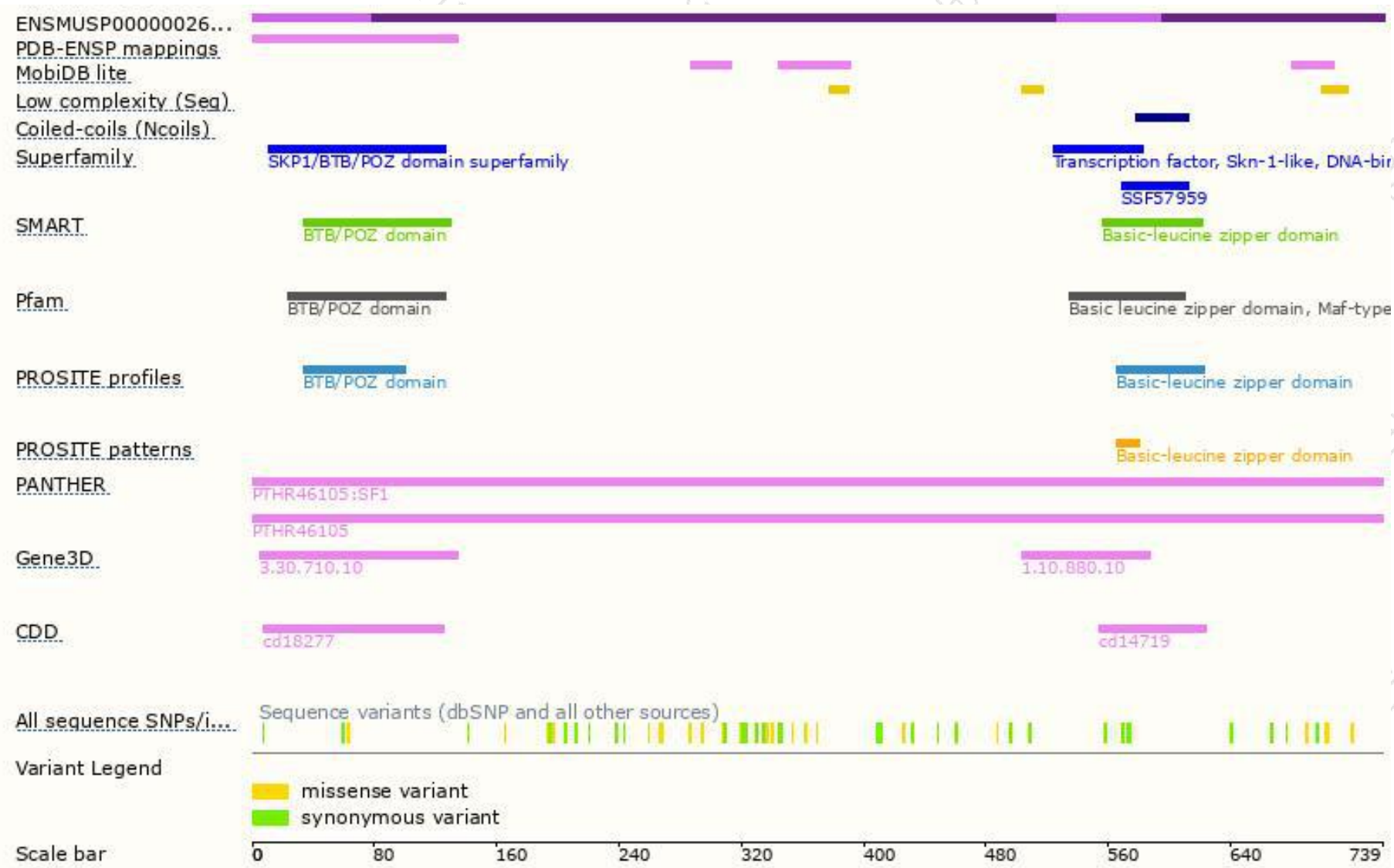
Genomic location distribution



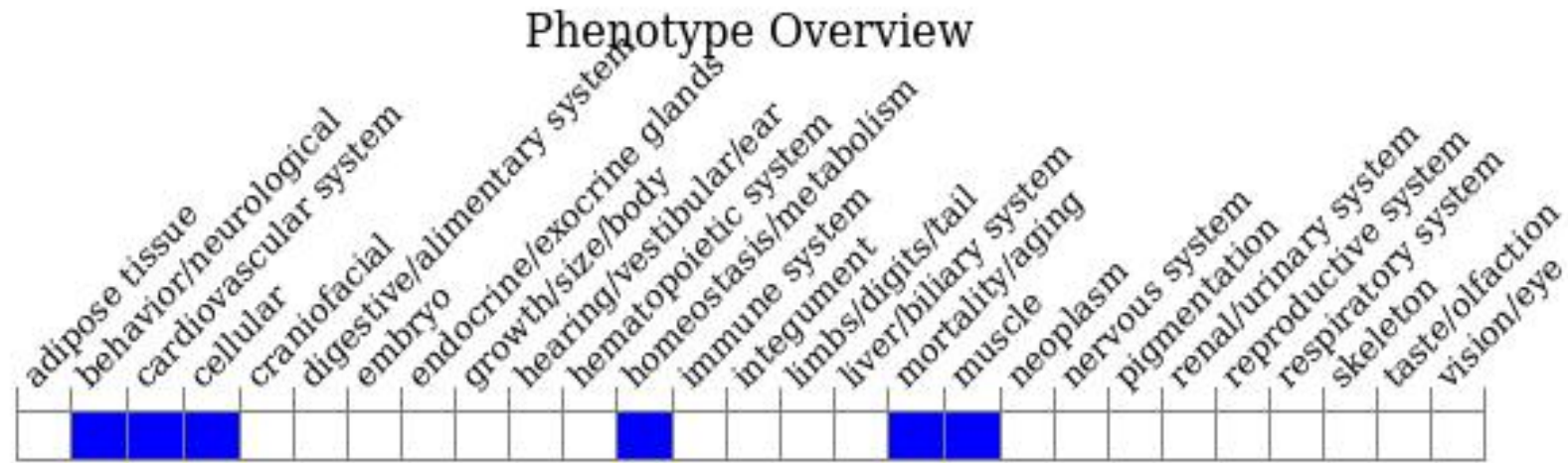
Protein domain



集萃药康
GemPharmatech



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, homozygous null mice are healthy and fertile with no gross abnormalities but express elevated levels of HMOX1.

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

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