

Fbp1 Cas9-CKO Strategy

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Project Overview

Project Name

Fbp1

Project type

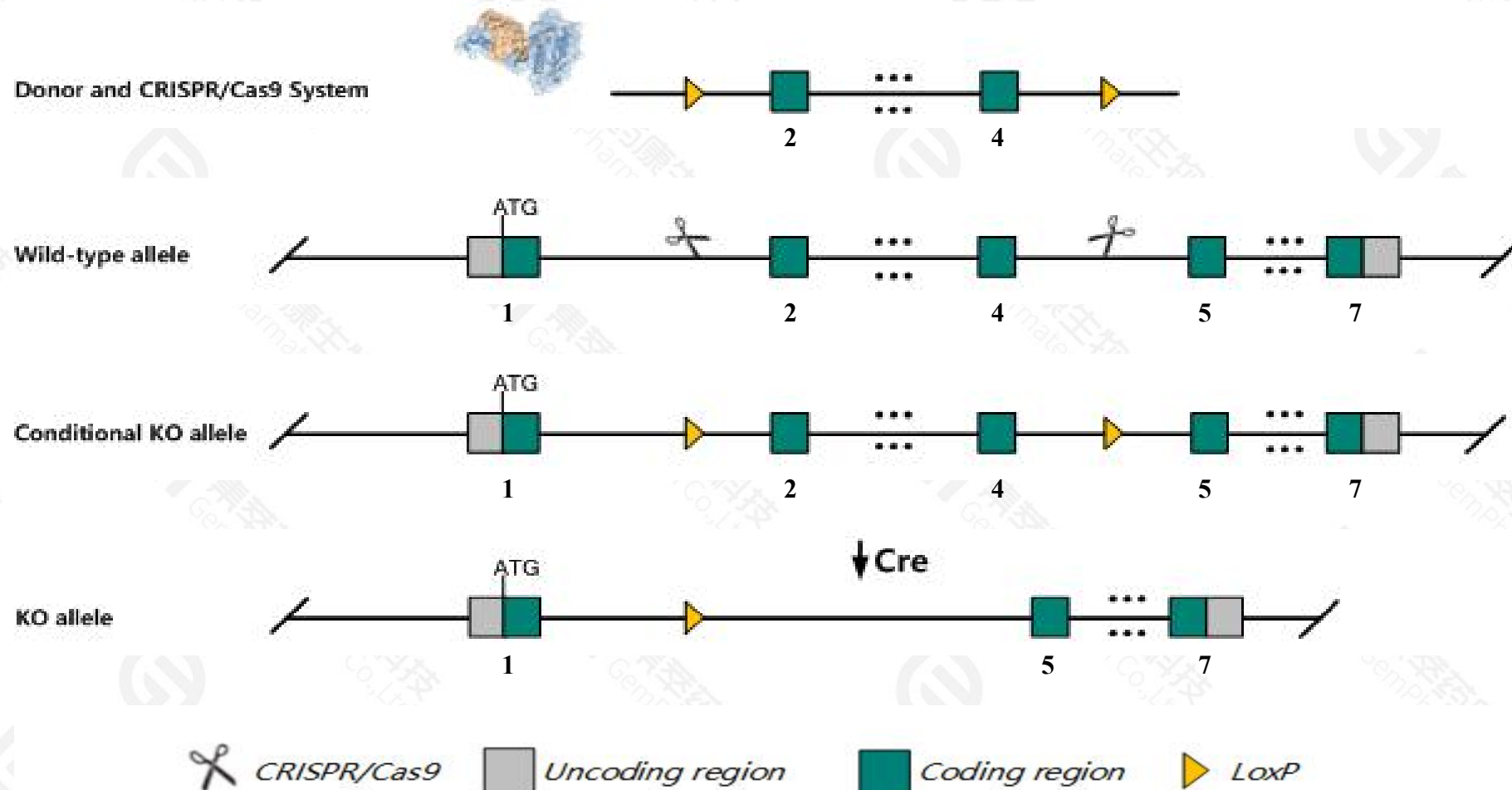
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fbp1* gene. The schematic diagram is as follows:



Technical routes

- The *Fbp1* gene has 3 transcripts. According to the structure of *Fbp1* gene, exon2-exon4 of *Fbp1*-201(ENSMUST00000092888.11) transcript is recommended as the knockout region. The region contains 397bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Fbp1* 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 an ENU-induced allele exhibit reduced fasting glucose levels.
- The *Fbp1* gene is located on the Chr13. 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)

Fbp1 fructose biphosphatase 1 [Mus musculus (house mouse)]

Gene ID: 14121, updated on 13-Mar-2020

Summary



Official Symbol Fbp1 provided by [MGI](#)

Official Full Name fructose biphosphatase 1 provided by [MGI](#)

Primary source [MGI:MGI:95492](#)

See related [Ensembl:ENSMUSG00000069805](#)

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 Fbp-2, Fbp2, Fbp3

Expression Biased expression in liver adult (RPKM 540.1), kidney adult (RPKM 489.1) and 3 other tissues [See more](#)

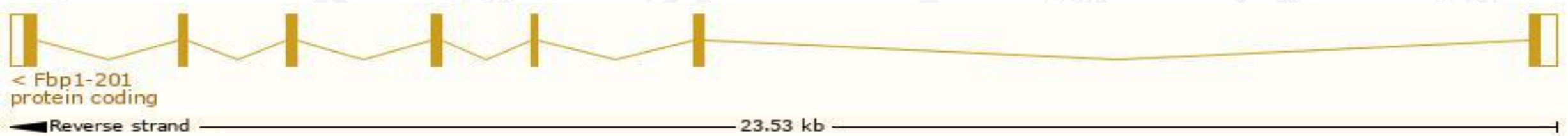
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

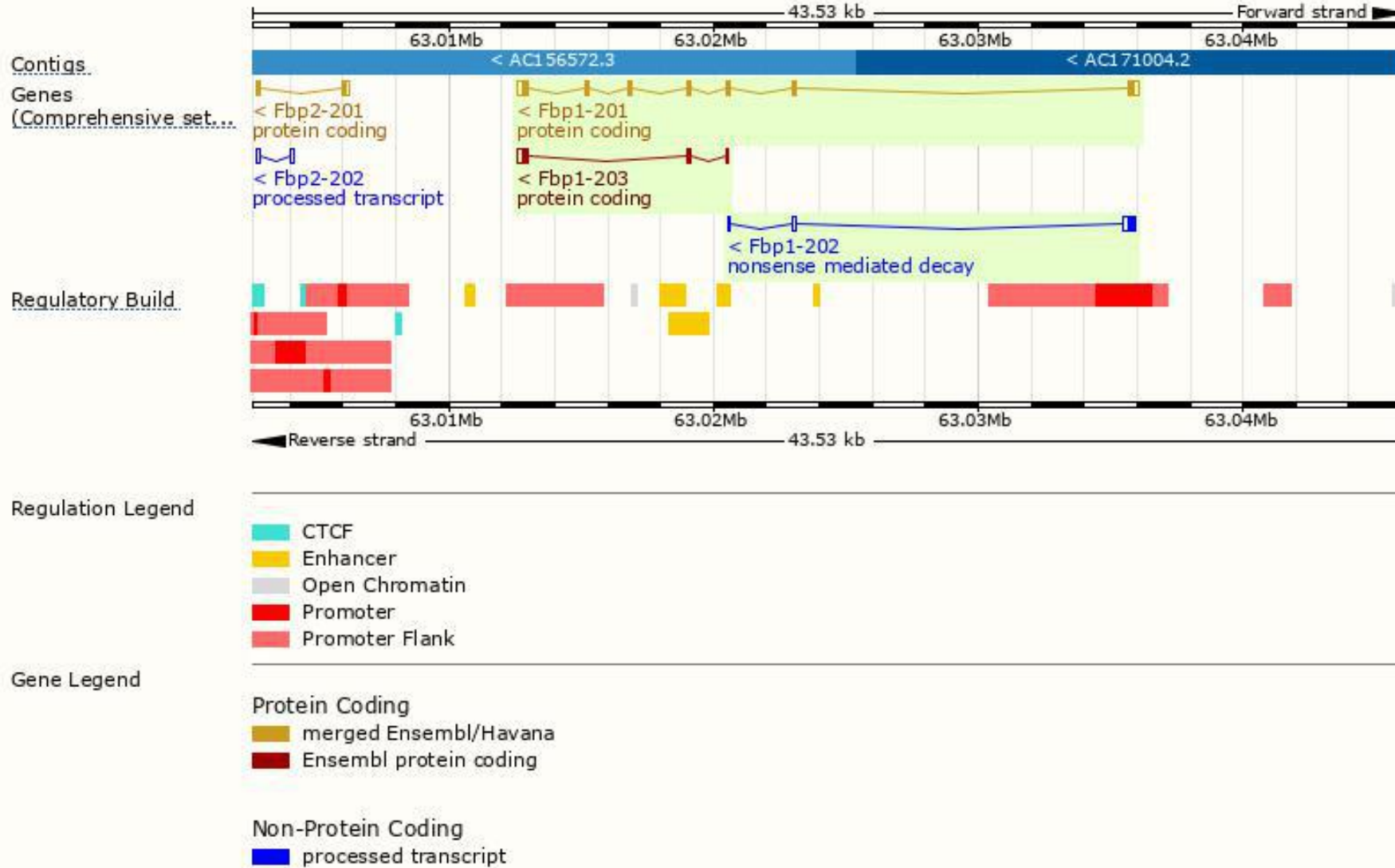
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fbp1-201	ENSMUST00000092888.10	1479	338aa	Protein coding	CCDS26590	Q9QXD6	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1
Fbp1-203	ENSMUST00000150013.1	612	133aa	Protein coding	-	F6YS63	CDS 5' incomplete TSL:5
Fbp1-202	ENSMUST00000134814.1	704	57aa	Nonsense mediated decay	-	E9Q0T7	TSL:5

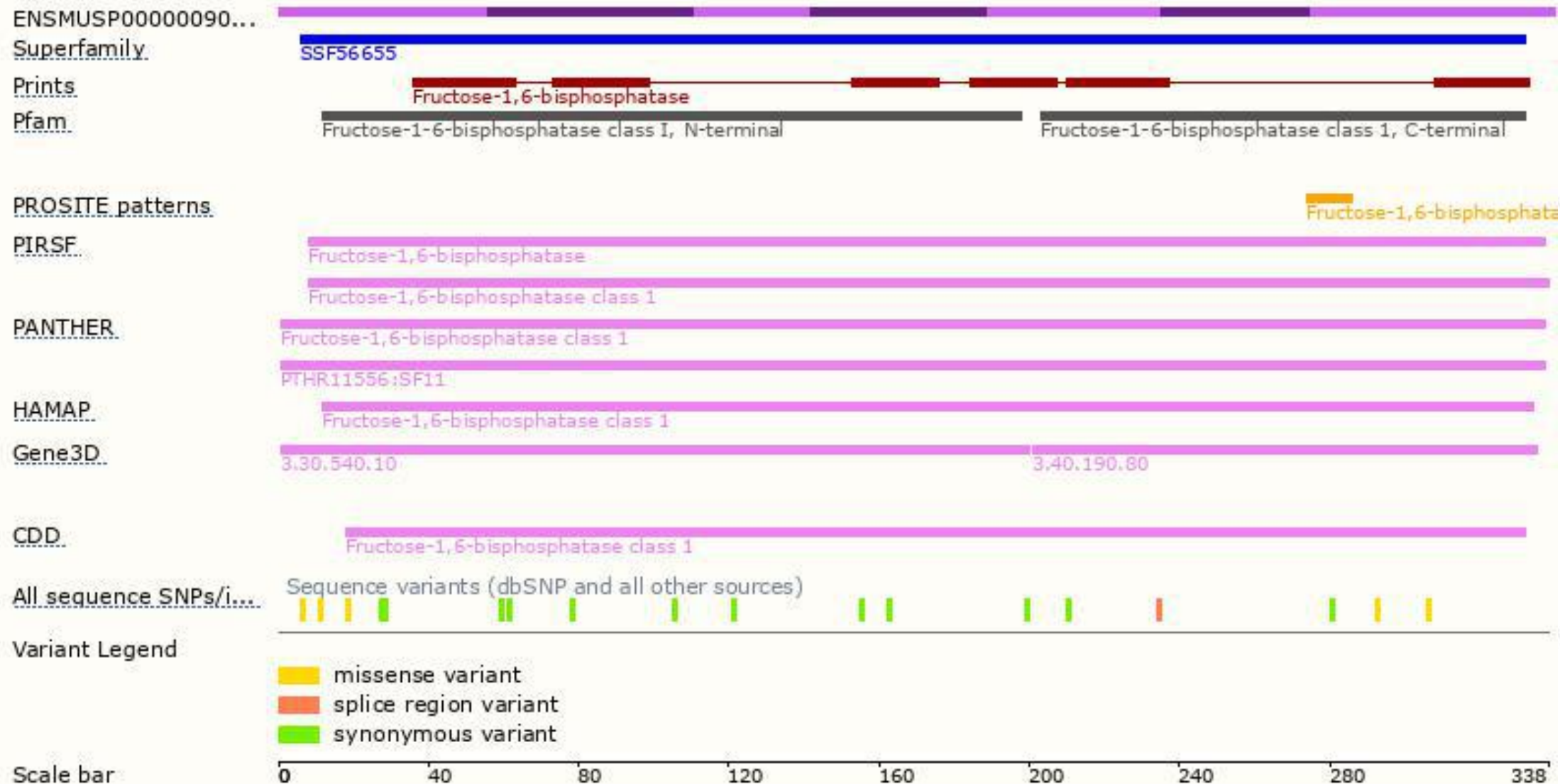
The strategy is based on the design of *Fbp1-201* transcript,the transcription is shown below:



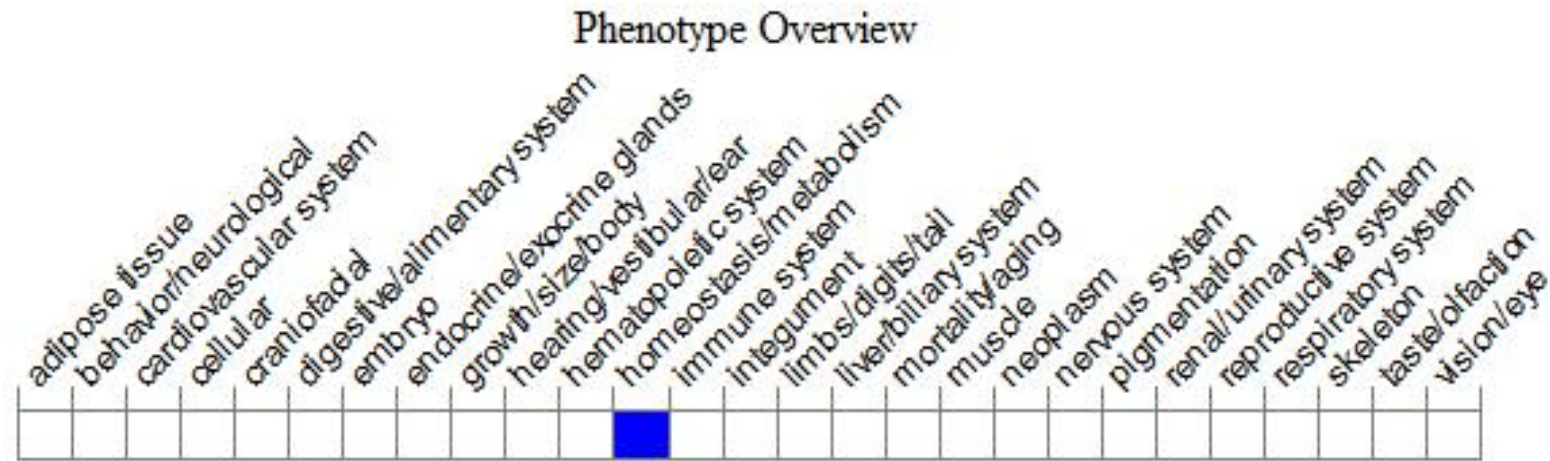
Genomic location distribution



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 an ENU-induced allele exhibit reduced fasting glucose levels.

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