

Fndc3b Cas9-CKO Strategy

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Project Overview

Project Name

Fndc3b

Project type

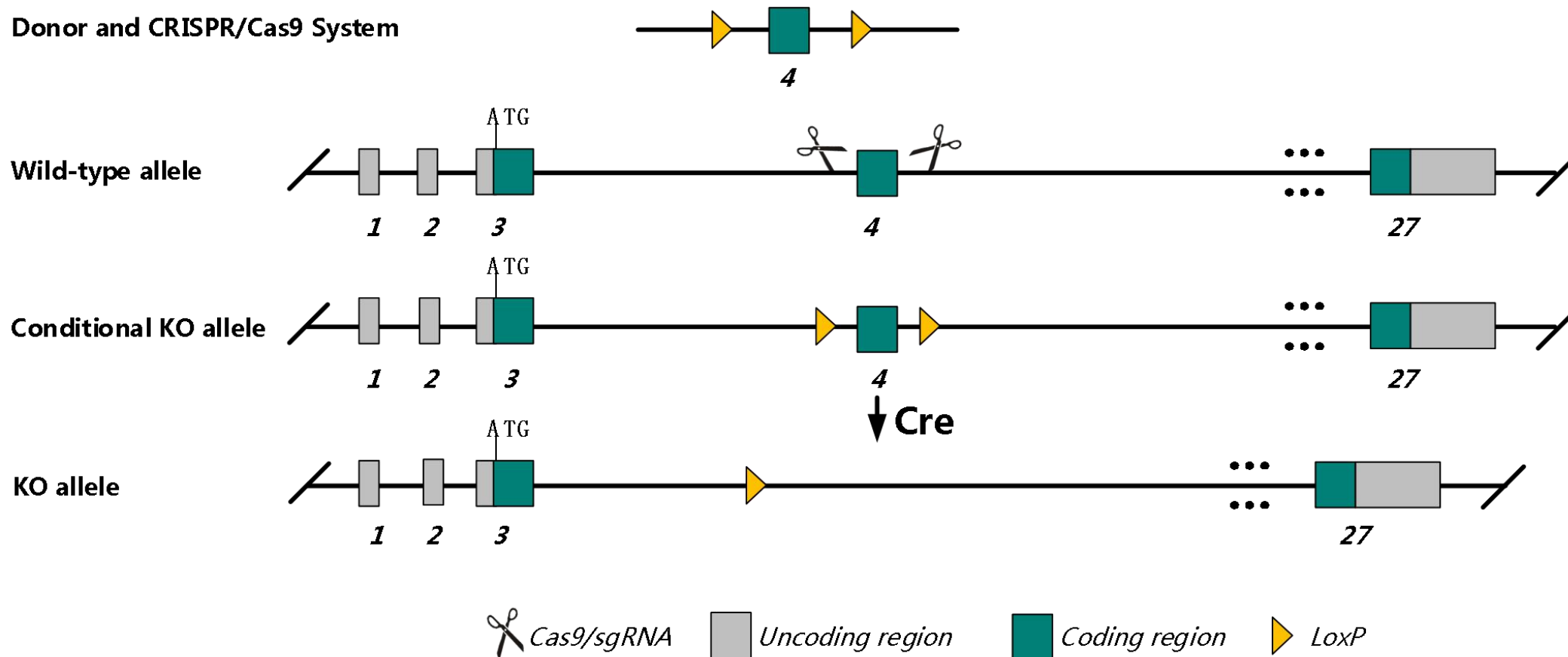
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fndc3b* gene. The schematic diagram is as follows:



- The *Fndc3b* gene has 4 transcripts. According to the structure of *Fndc3b* gene, exon4 of *Fndc3b*-204 (ENSMUST00000195008.5) transcript is recommended as the knockout region. The region contains 76bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Fndc3b* 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 a knock-out allele die shortly after birth despite normal energy homeostasis. Mouse embryonic fibroblasts homozygous for a knock-out allele exhibit impaired adipogenesis and enhanced osteogenesis.
- The *Fndc3b* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Fndc3b fibronectin type III domain containing 3B [Mus musculus (house mouse)]

Gene ID: 72007, updated on 31-Jan-2019

Summary

Official Symbol	Fndc3b provided by MGI
Official Full Name	fibronectin type III domain containing 3B provided by MGI
Primary source	MGI:MGI:1919257
See related	Ensembl:ENSMUSG00000039286
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	1600019O04Rik, AW550168, Fad104, mKIAA4164
Expression	Ubiquitous expression in placenta adult (RPKM 16.1), limb E14.5 (RPKM 9.8) and 27 other tissues See more
Orthologs	human all

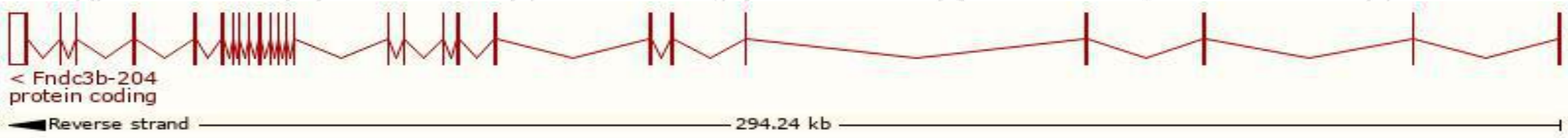
Transcript information

Ensembl

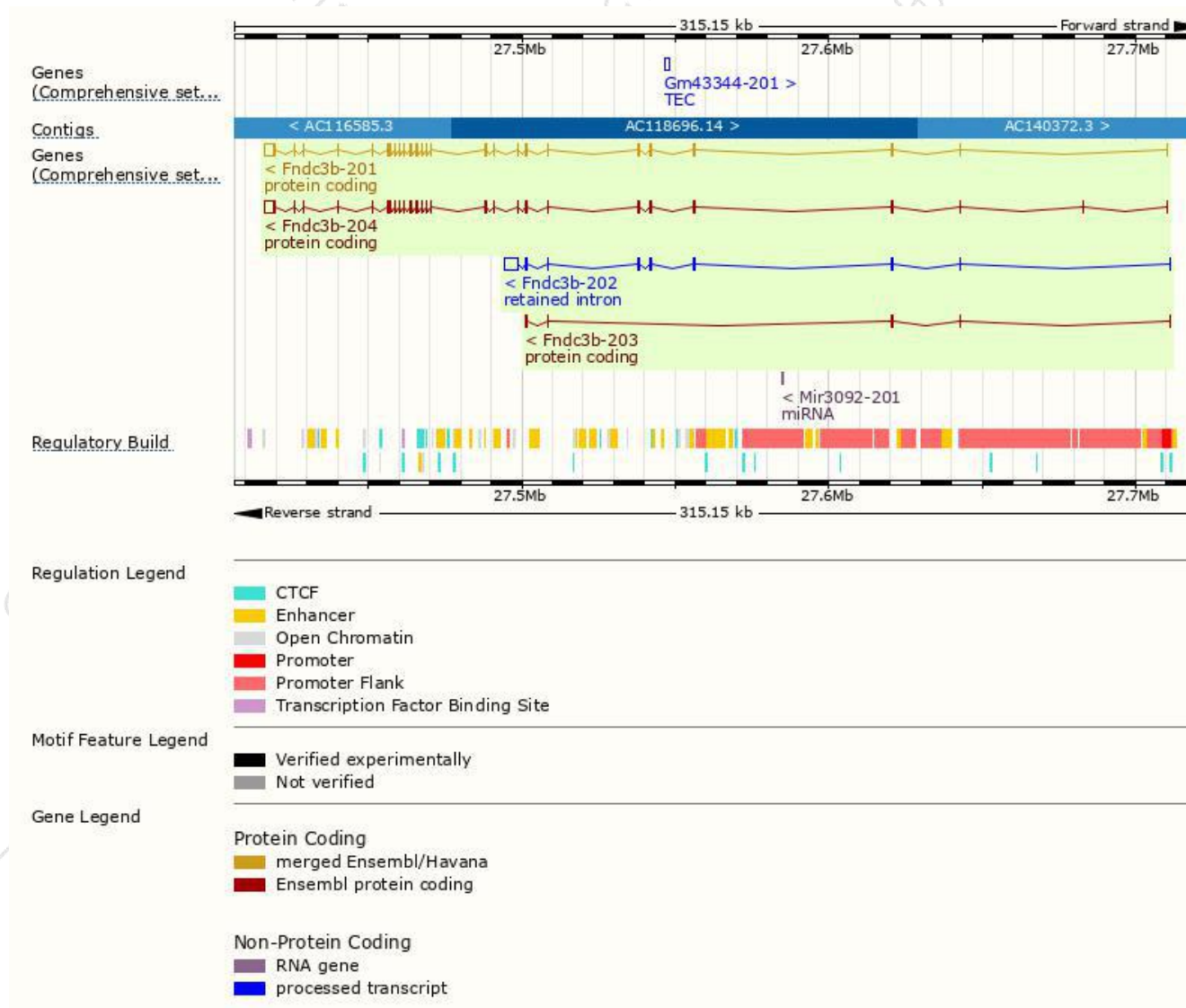
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fndc3b-204	ENSMUST00000195008.5	6886	1207aa	Protein coding	CCDS17274	A0A0R4J0H8	TSL:1 GENCODE basic APPRIS P1
Fndc3b-201	ENSMUST00000046157.9	6875	1207aa	Protein coding	CCDS17274	A0A0R4J0H8	TSL:1 GENCODE basic APPRIS P1
Fndc3b-203	ENSMUST00000193779.1	505	119aa	Protein coding	-	A0A0A6YX88	CDS 3' incomplete TSL:2
Fndc3b-202	ENSMUST00000191684.1	5631	No protein	Retained intron	-	-	TSL:1

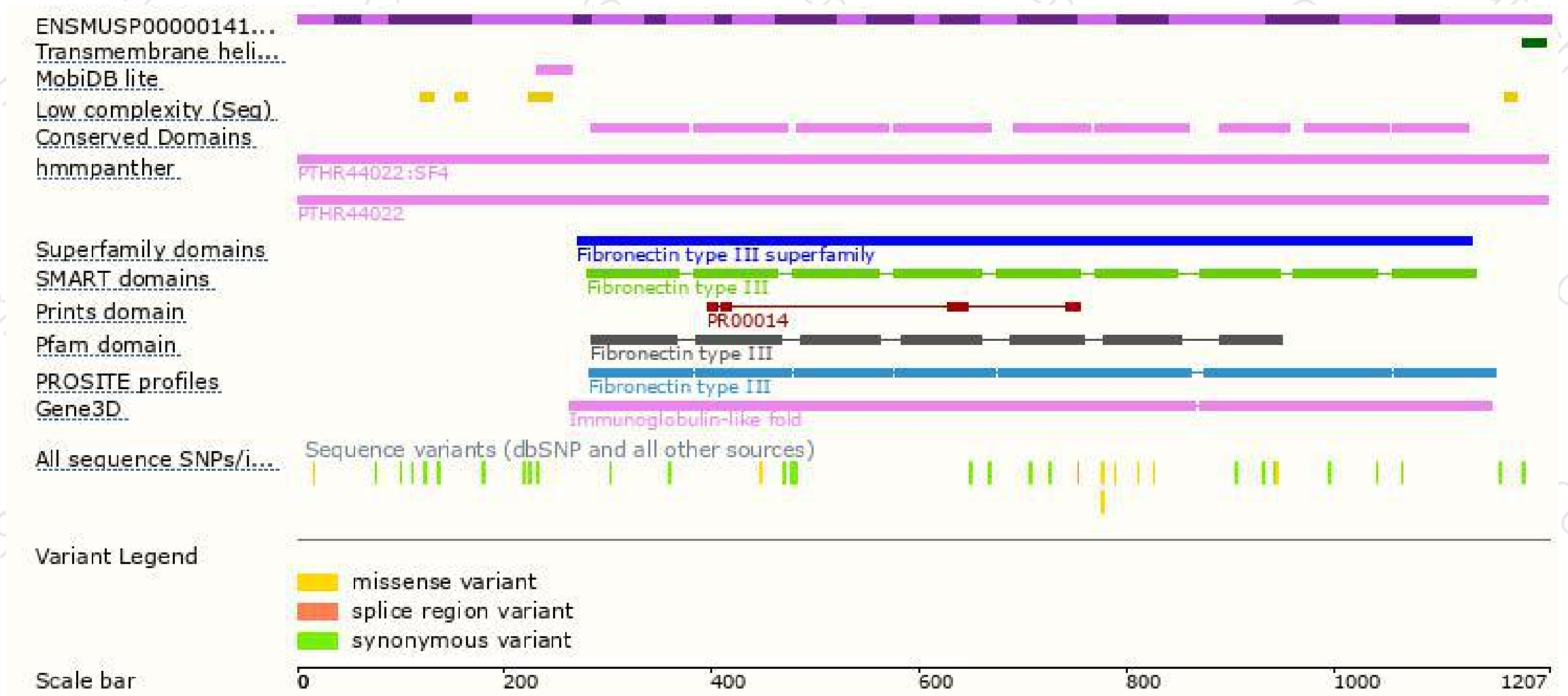
The strategy is based on the design of *Fndc3b-204* transcript,The transcription is shown below



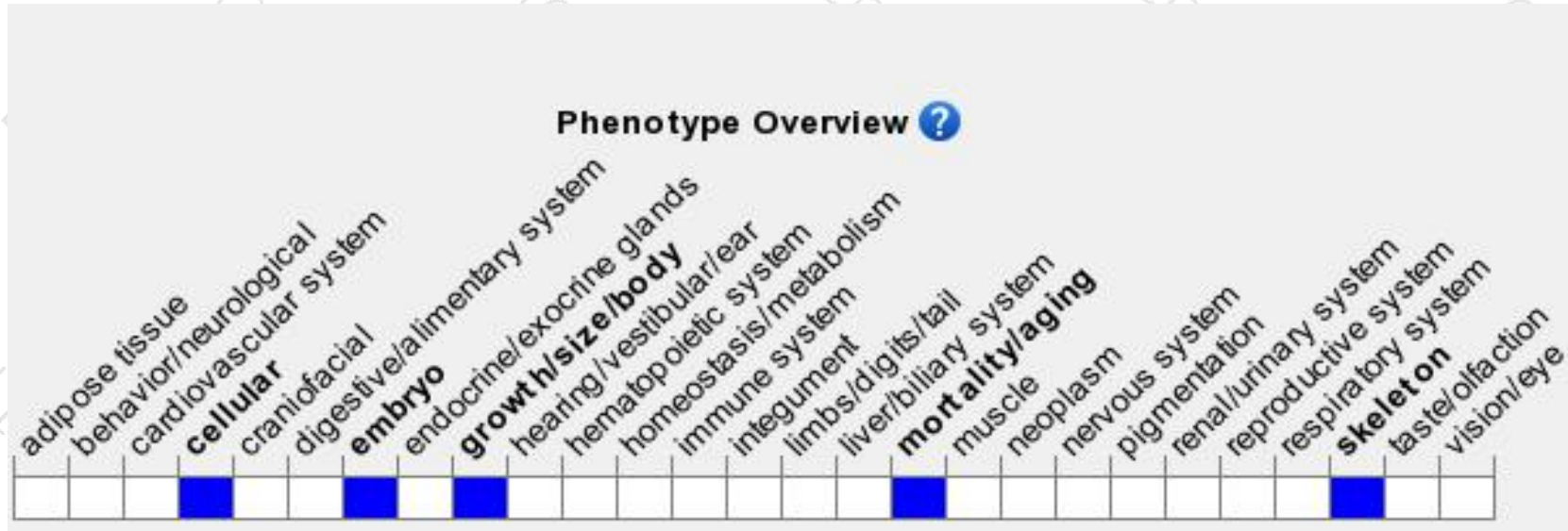
Genomic location distribution



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 a knock-out allele die shortly after birth despite normal energy homeostasis. Mouse embryonic fibroblasts homozygous for a knock-out allele exhibit impaired adipogenesis and enhanced osteogenesis.

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

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