

Sost-CreERT2 Cas9-KI Strategy

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Reviewer

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Design Date:

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Project Overview

Project Name

Sost-CreERT2

Project type

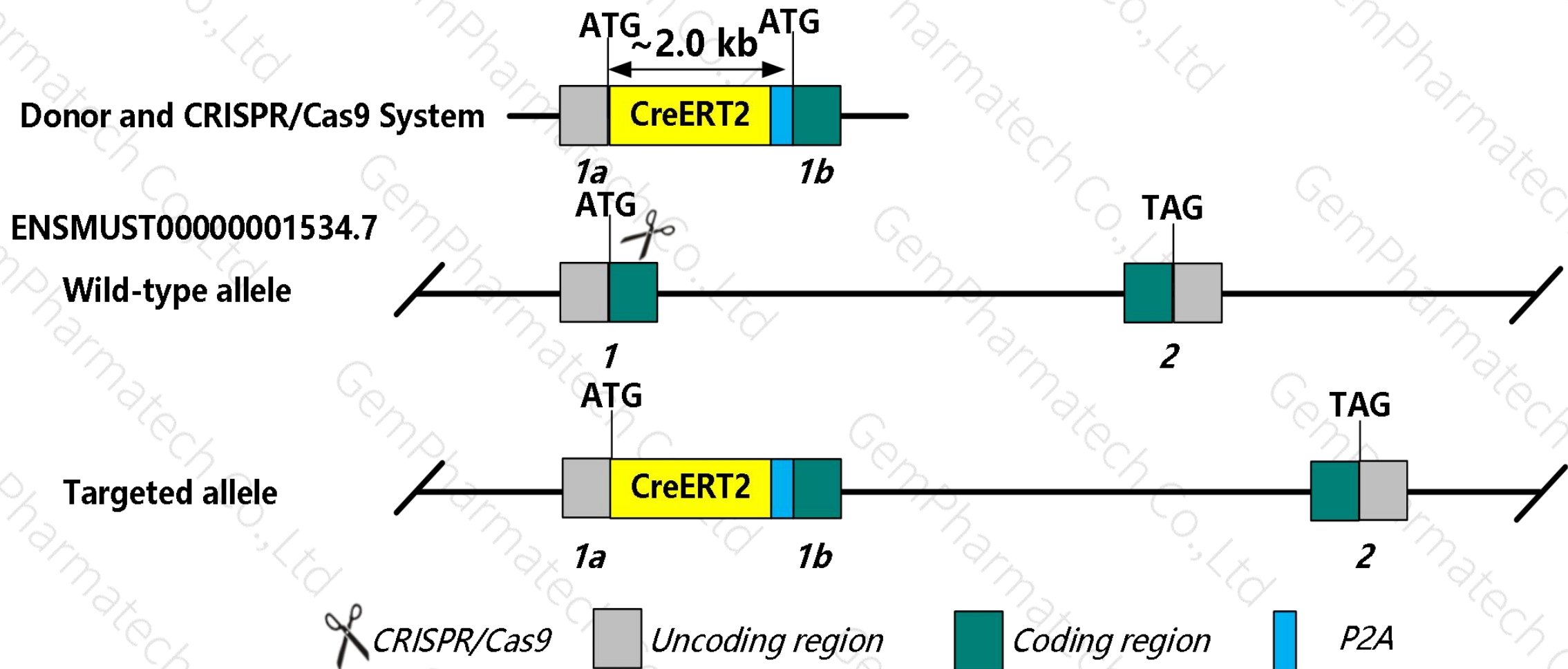
Cas9-KI

Strain background

C57BL/6JGpt

Knockin strategy

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



- The *Sost* gene has 1 transcript. According to the structure of *Sost* gene, *Sost-201*(ENSMUST00000001534.7) is selected for presentation of the recommended strategy.
- *Sost-201* gene has 2 exons, with the ATG start codon in exon1 and TAG stop codon in exon2. The sequence of CreERT2-P2A will insert near to the start codon(ATG) of *Sost* gene.
- In this project we use CRISPR/Cas9 technology to modify *Sost* 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.

- According to the existing MGI data, in mild form, mice homozygous for a null allele exhibit an increase in trabecular and cortical bone volume, mineral density, and formation.
- The P2A-linked gene drives expression in the same promoter and is cleaved at the translational level. The gene expression levels are consistent, and the before of P2A expressing gene carries the P2A-translated polypeptide.
- Insertion of CreERT2-P2A may affect the regulation of the 5' end of the *Sost* gene.
- There may be 1 to 2 amino acid synonymous mutation in exon1 of *Sost* gene in this strategy.
- There may be base mutations in the modeling process because of the repetitive sequences (PolyC&PolyG) upstream and downstream of the insertion site.
- The insertion site is near to the N-terminal of *Gm20659* gene, the strategy may influence the function N-terminal of *Gm20659* gene.
- The *Sost* gene is located on the Chr11. If the knockin 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 gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information (NCBI)

Sost sclerostin [*Mus musculus* (house mouse)]

Gene ID: 74499, updated on 1-Oct-2021

Download Datasets

Summary

Official Symbol Sost provided by [MGI](#)
Official Full Name sclerostin provided by [MGI](#)
Primary source [MGI:MGI:1921749](#)
See related [Ensembl:ENSMUSG00000001494](#)
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 5430411E23Rik
Expression Biased expression in genital fat pad adult (RPKM 4.4), testis adult (RPKM 2.5) and 7 other tissues [See more](#)
Orthologs [human](#) [all](#)

NEW Try the new [Gene table](#)
Try the new [Transcript table](#)

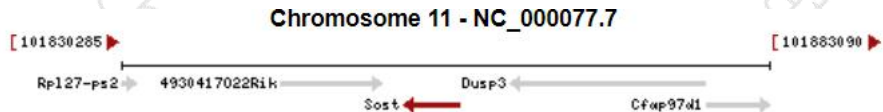
Genomic context

Location: 11; 11 D

See Sost in [Genome Data Viewer](#)

Exon count: 3

Annotation release	Status	Assembly	Chr	Location
109	current	GRCm39 (GCF_000001635.27)	11	NC_000077.7 (101853284..101857841, complement)
108.20200622	previous assembly	GRCm38.p6 (GCF_000001635.26)	11	NC_000077.6 (101962458..101967015, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	11	NC_000077.5 (101823772..101828329, complement)

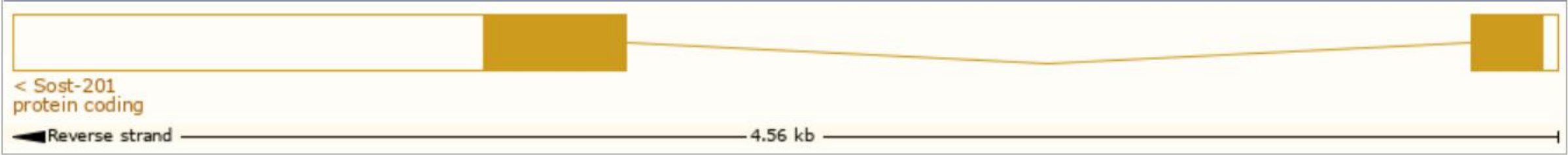


Transcript information (Ensembl)

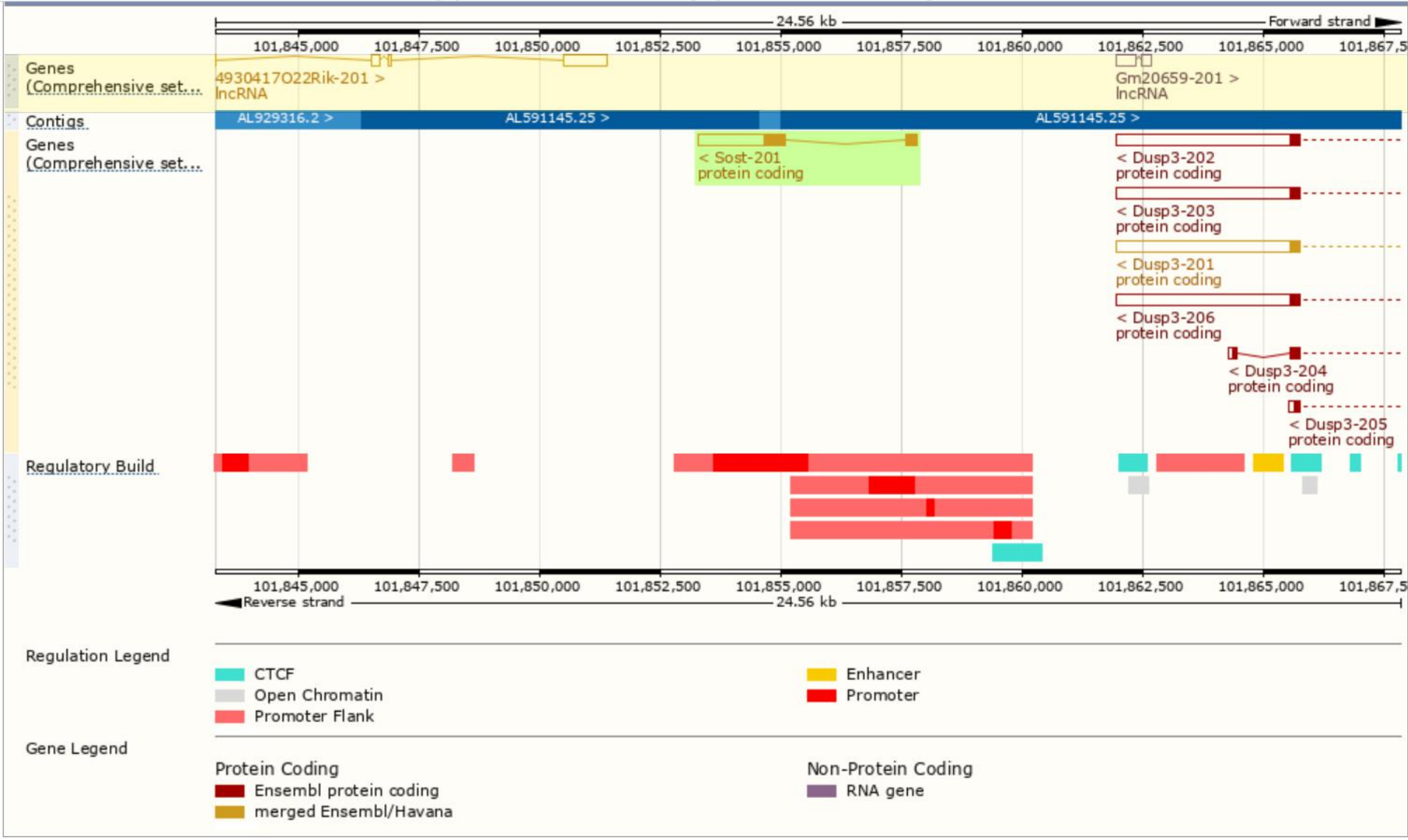
The gene has 1 transcript, and the transcript is shown below :

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt Match	Flags
Sost-201	ENSMUST00000001534.7	2066	211aa	Protein coding	CCDS25481	Q99P68	GENCODE basic APPRIS P1 TSL:1

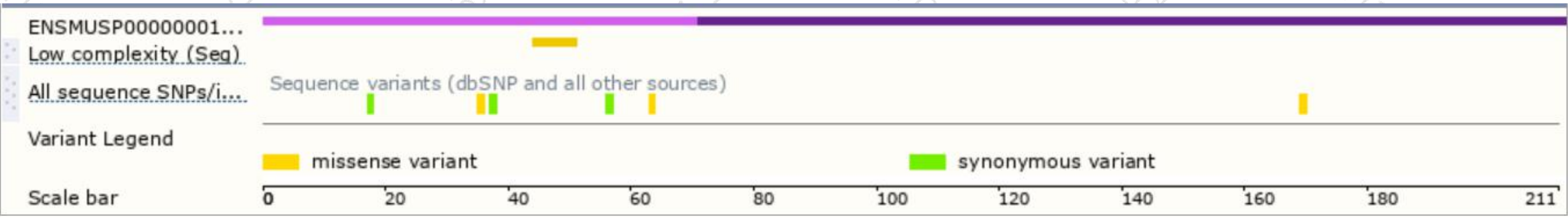
The strategy is based on the design of *Sost-201* transcript,the transcription is shown below



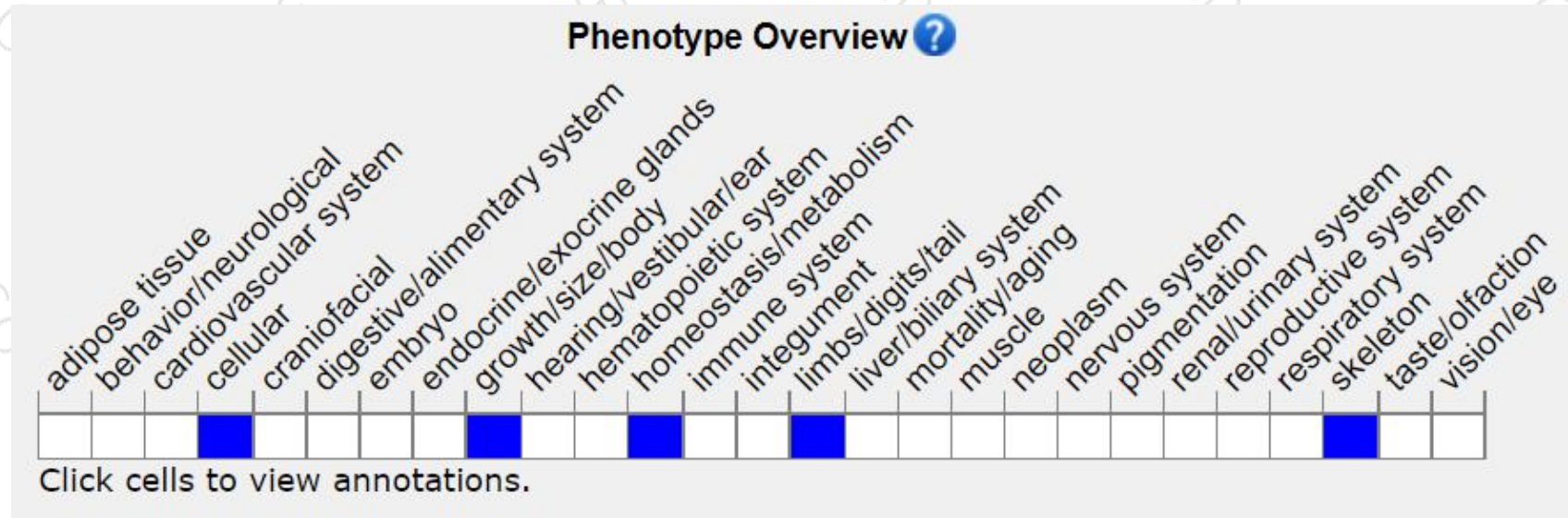
Genomic location distribution



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/marker/MGI:1921749>) .

Mice homozygous for a null allele exhibit an increase in trabecular and cortical bone volume, mineral density, and formation.

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