Wnt16 Cas9-CKO Strategy

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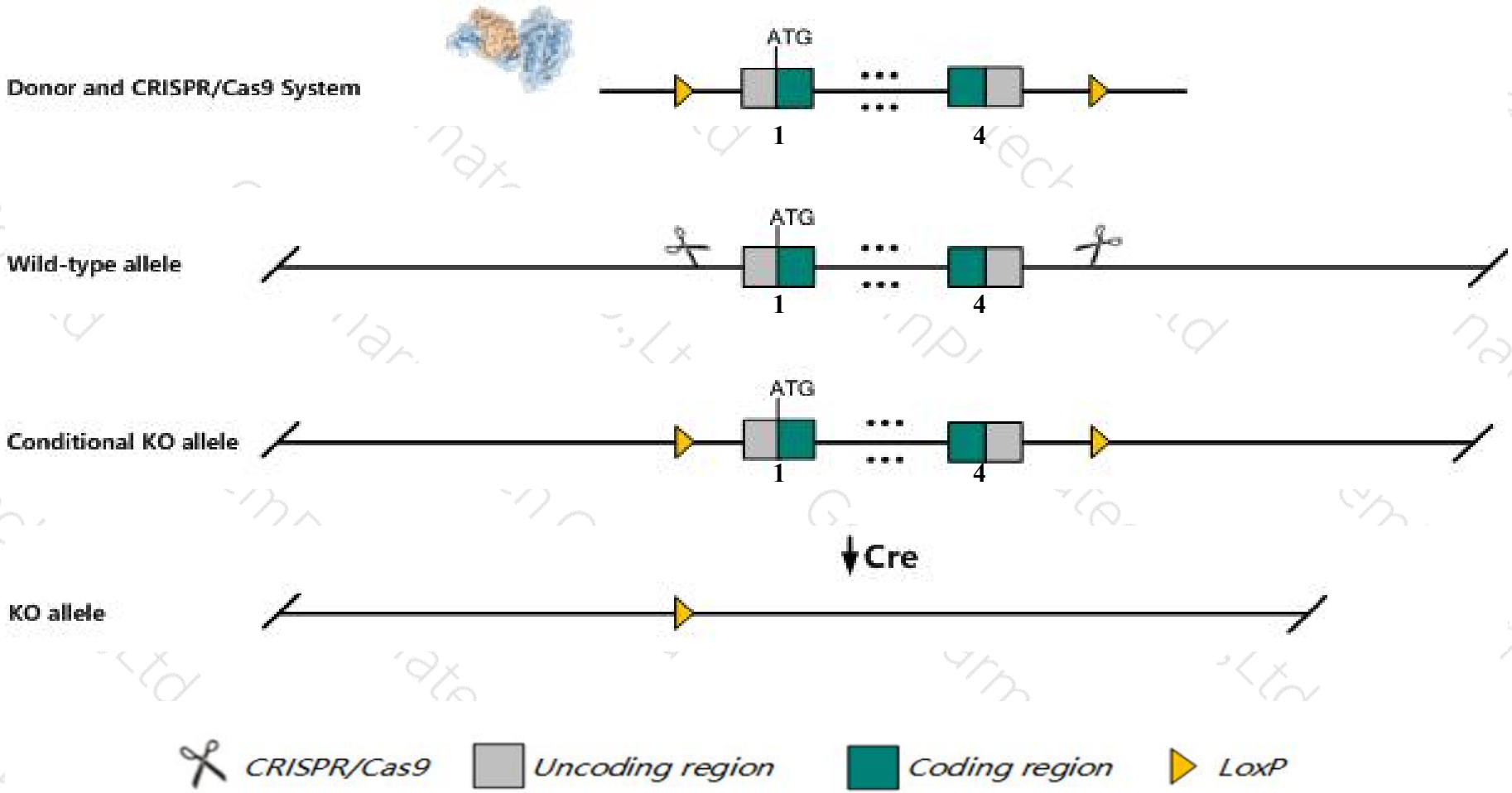
Project Overview

Project Name	***Wnt16***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Wnt16* gene. The schematic diagram is as follows:



Technical routes

- The *Wnt16* gene has 4 transcripts. According to the structure of *Wnt16* gene, exon1-exon4 of *Wnt16-201* (ENSMUST00000031681.9) 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 *Wnt16* 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.

Notice

- According to the existing MGI data,Mice homozygous for a knock-out allele exhibit decreased bone mineral density, cortical bone thickness and bone strength.

- Insertion of loxp at both ends may affect the regulation of this gene.

- The *Wnt16* gene is located on the Chr6. 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）

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Wnt16 wingless-type MMTV integration site family, member 16 [Mus musculus (house mouse)]

Gene ID: 93735, updated on 24-Feb-2019

Summary

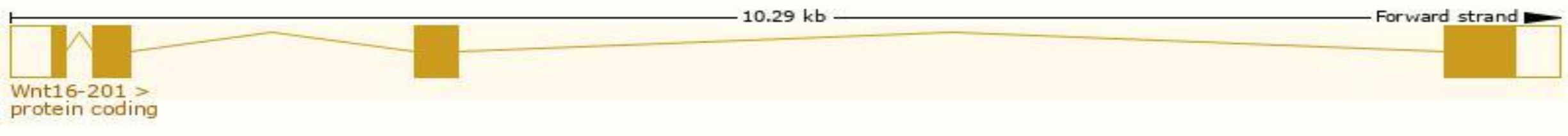
Official Symbol	Wnt16 provided by MGI
Official Full Name	wingless-type MMTV integration site family, member 16 provided by MGI
Primary source	MGI:MGI:2136018
See related	Ensembl:ENSMUSG00000029671
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	E130309I19Rik
Expression	Biased expression in ovary adult (RPKM 2.9), subcutaneous fat pad adult (RPKM 1.0) and 3 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

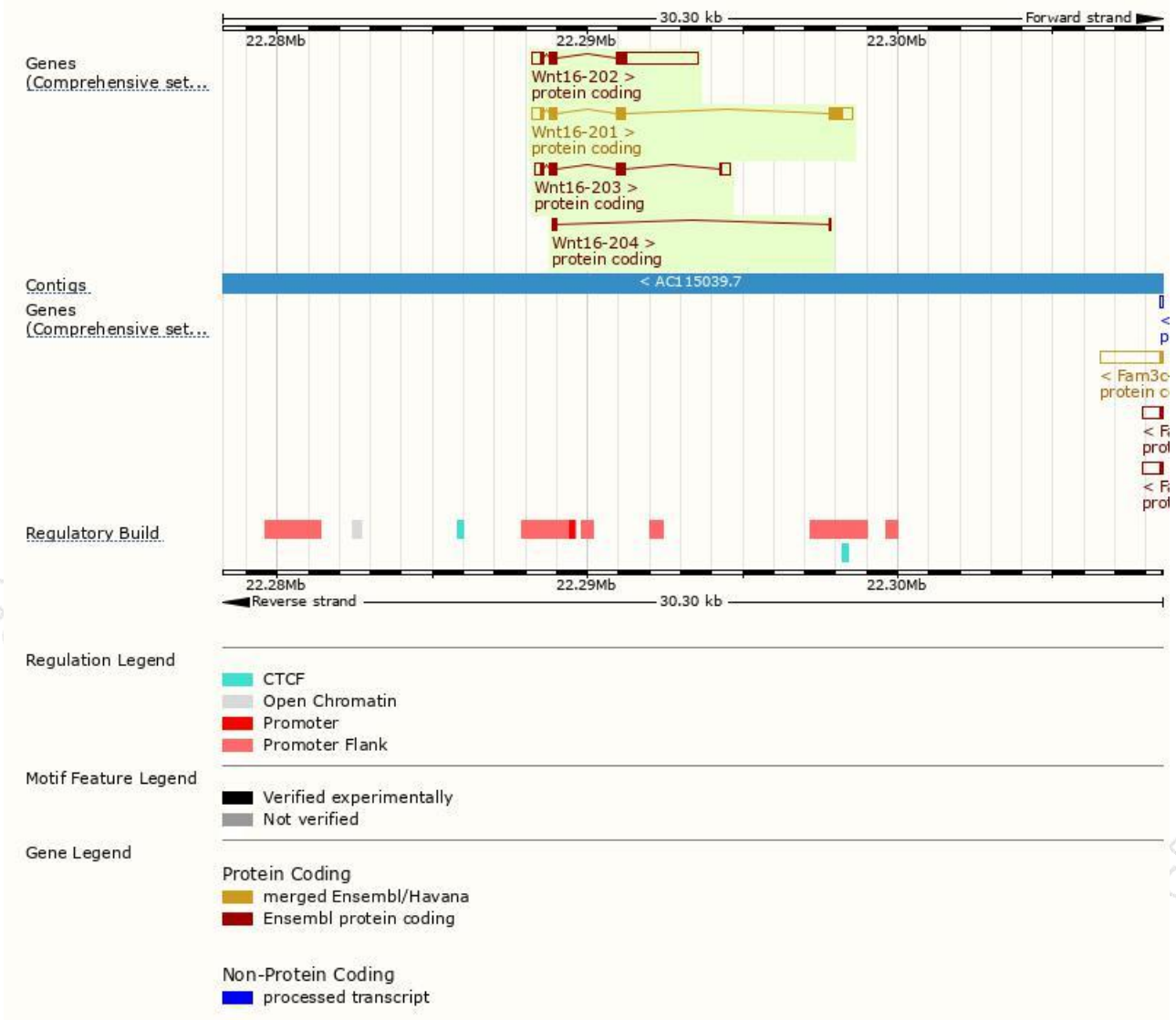
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Wnt16-201	ENSMUST00000031681.9	1663	364aa	Protein coding	CCDS19936	Q9QYS1	TSL:1 GENCODE basic APPRIS P1
Wnt16-202	ENSMUST00000128245.7	3285	225aa	Protein coding	-	H3BJ29	TSL:1 GENCODE basic
Wnt16-203	ENSMUST00000148639.1	1168	225aa	Protein coding	-	Q8BRT3	TSL:1 GENCODE basic
Wnt16-204	ENSMUST00000176681.1	229	76aa	Protein coding	-	H3BL02	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:5

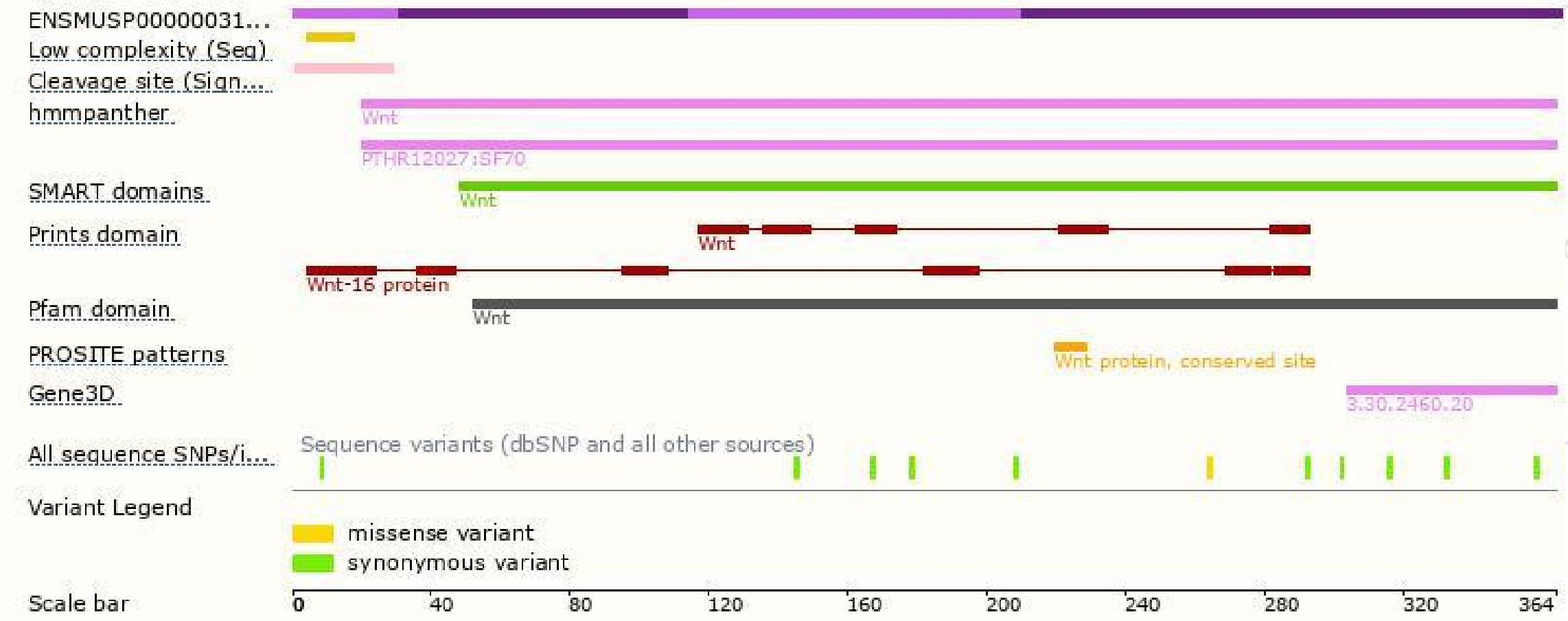
The strategy is based on the design of *Wnt16-201* transcript,The transcription is shown below



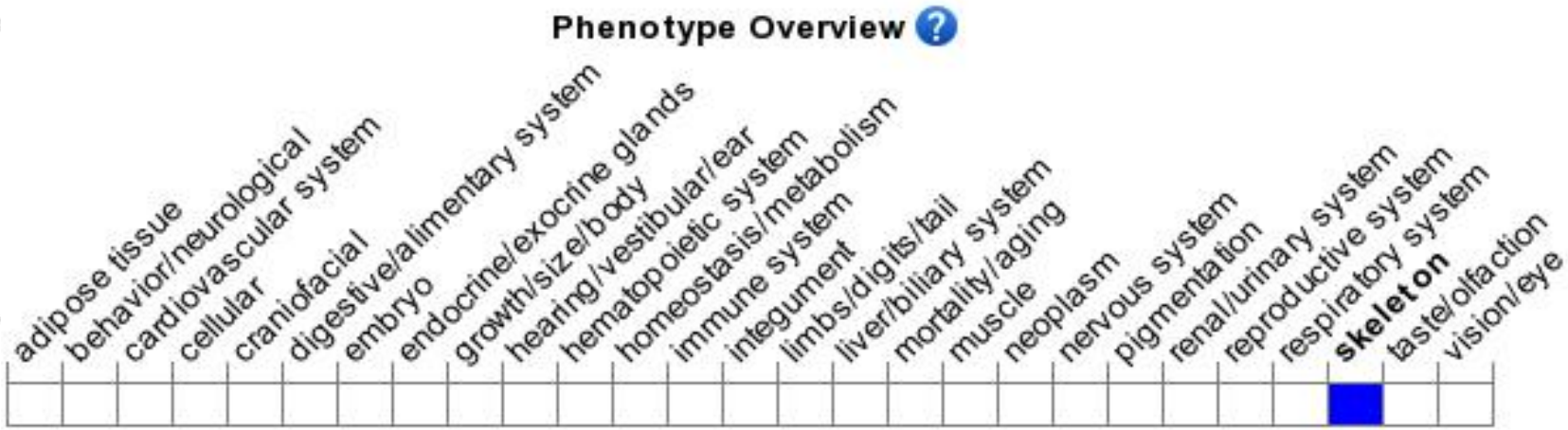
Genomic location distribution



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 a knock-out allele exhibit decreased bone mineral density, cortical bone thickness and bone strength.

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

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