Fosl2 Cas9-CKO Strategy

Designer: Shilei Zhu

Project Overview

Project Name	***Fosl2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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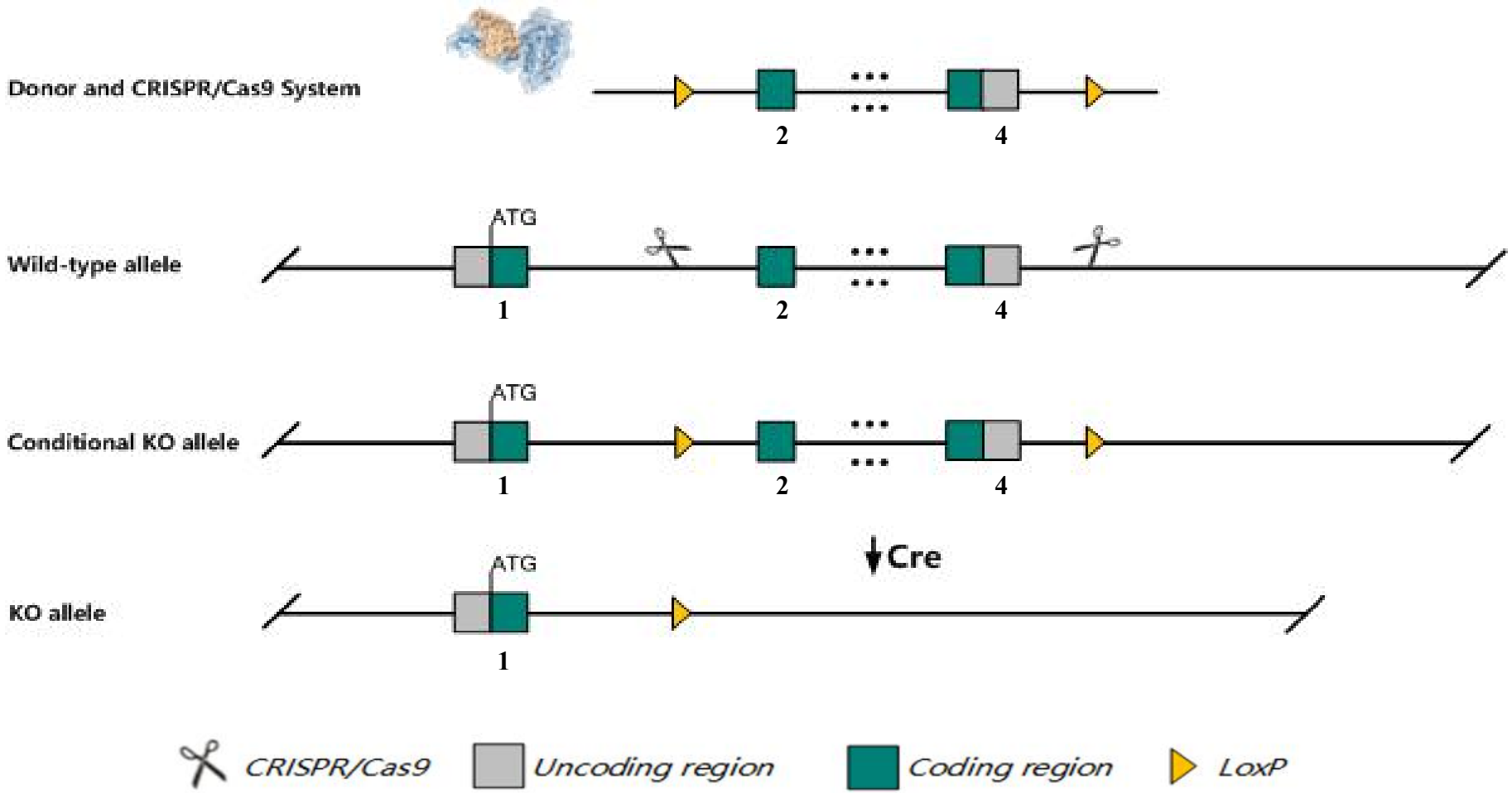
This model will use CRISPR/Cas9 technology to edit the *Fosl2* gene. The schematic diagram is as follows:



Technical routes

The *Fosl2* gene has 3 transcripts. According to the structure of *Fosl2* gene, exon2-exon4 of *Fosl2-201* (ENSMUST00000031017.10) transcript is recommended as the knockout region.The region contains most 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 *Fosl2* 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 disruptions in this gene die within one week after birth and show postnatal growth retardation. Further analysis of one allele showed abnormal cartilage development, with delayed bone ossification and impaired chondrocyte differentiation.

The *Fosl2* gene is located on the Chr5. 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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Fosl2 fos-like antigen 2 [Mus musculus (house mouse)]

Gene ID: 14284, updated on 31-Jan-2019

Summary

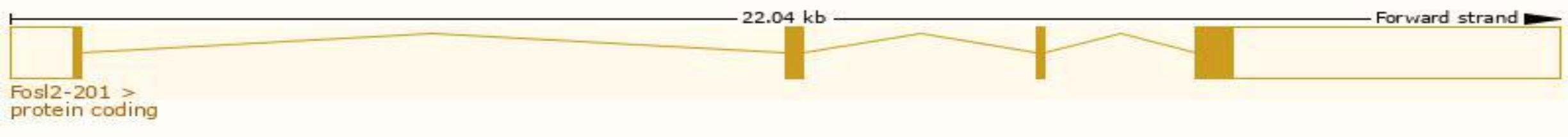
Official Symbol	Fosl2 provided by MGI
Official Full Name	fos-like antigen 2 provided by MGI
Primary source	MGI:MGI:102858
See related	Ensembl:ENSMUSG00000029135
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Fra-2
Expression	Biased expression in adrenal adult (RPKM 84.0), ovary adult (RPKM 51.4) and 11 other tissues See more
Orthologs	human all

Transcript information Ensembl

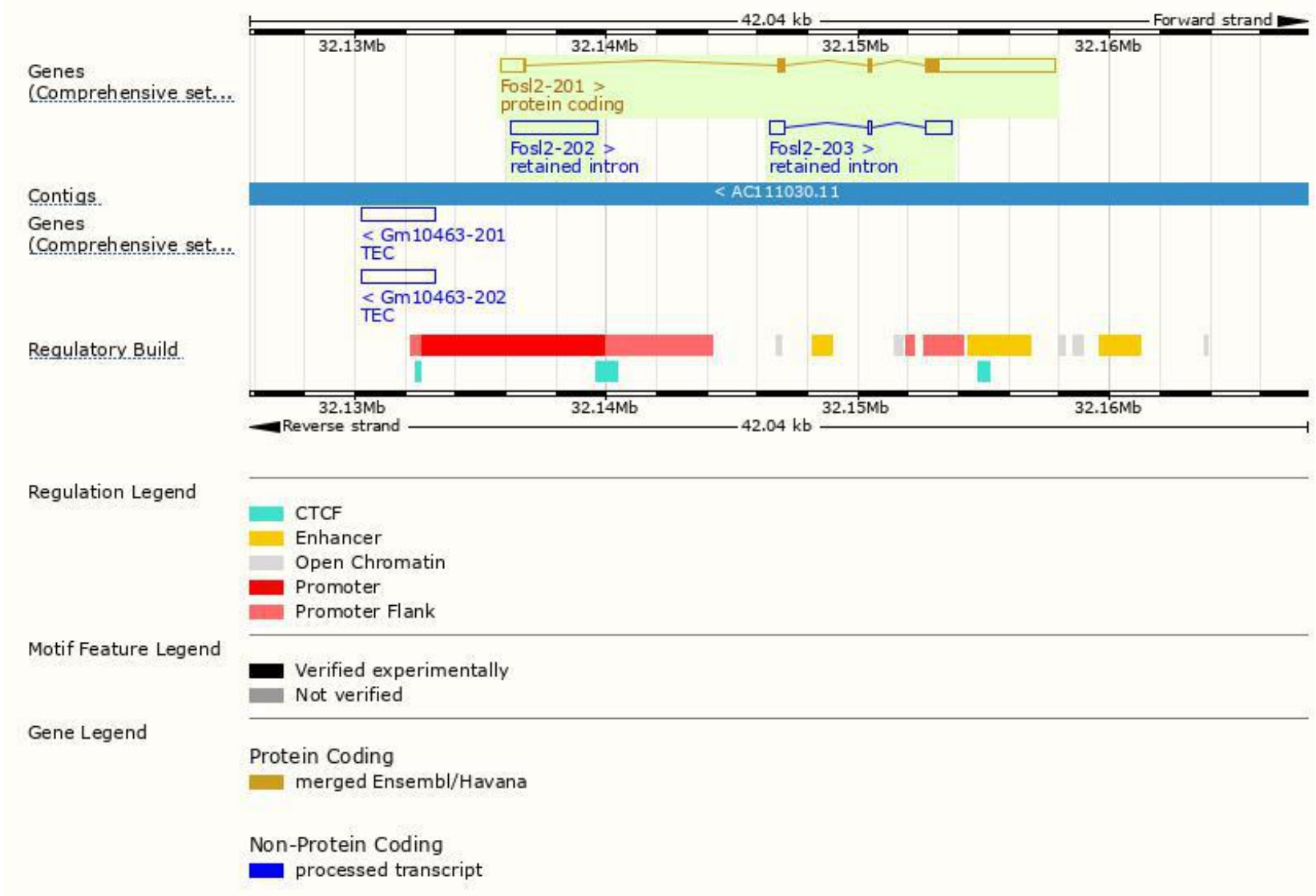
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fosl2-201	ENSMUST00000031017.10	6537	326aa	Protein coding	CCDS19190	P47930	TSL:1 GENCODE basic APPRIS P1
Fosl2-202	ENSMUST00000201110.1	3472	No protein	Retained intron	-	-	TSL:NA
Fosl2-203	ENSMUST00000202169.1	1707	No protein	Retained intron	-	-	TSL:1

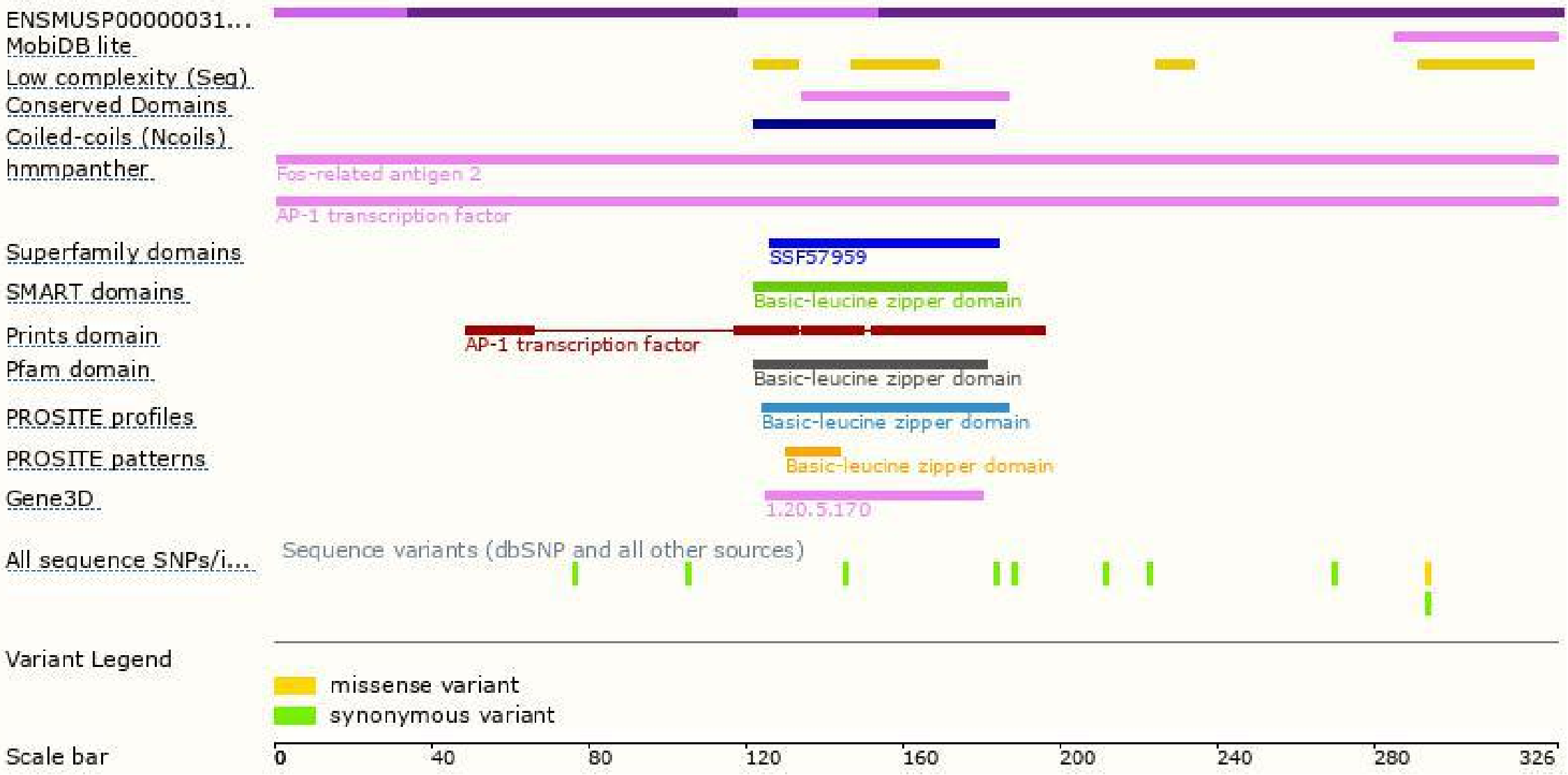
The strategy is based on the design of *Fosl2-201* transcript,The transcription is shown below



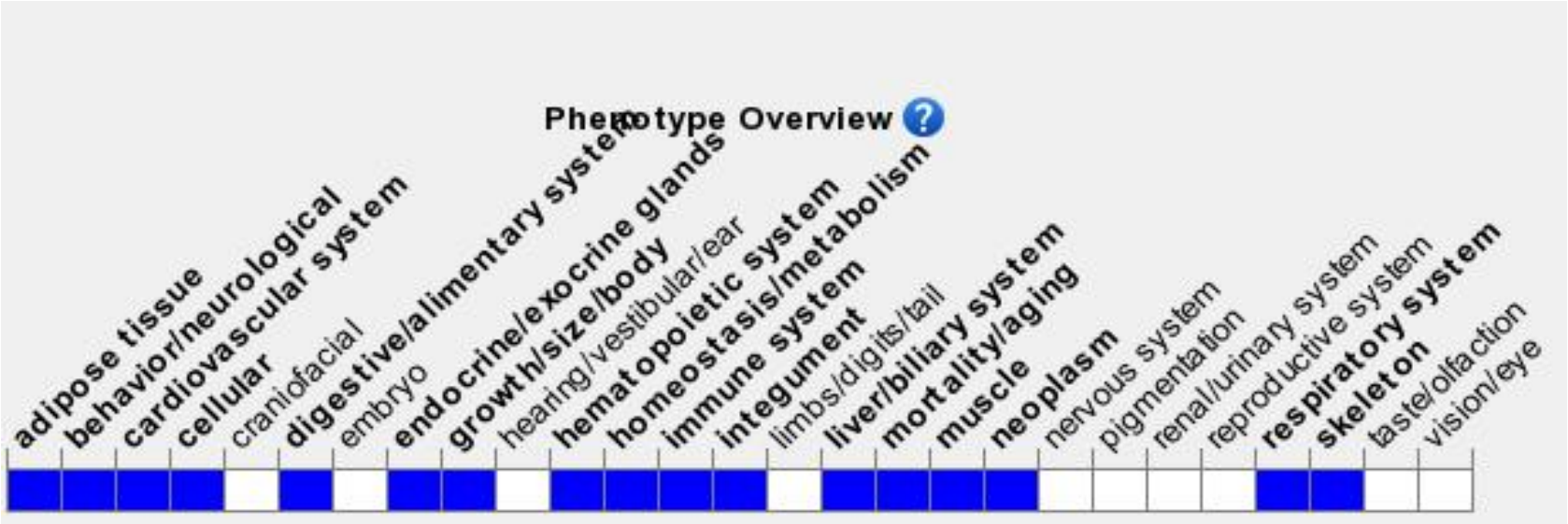
Genomic location distribution



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 disruptions in this gene die within one week after birth and show postnatal growth retardation. Further analysis of one allele showed abnormal cartilage development, with delayed bone ossification and impaired chondrocyte differentiation.

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If you have any questions, you are welcome to inquire.
Tel: 400-9660890

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GemPharmatech Co.,Ltd