Tnfrsf11b Cas9-CKO Strategy

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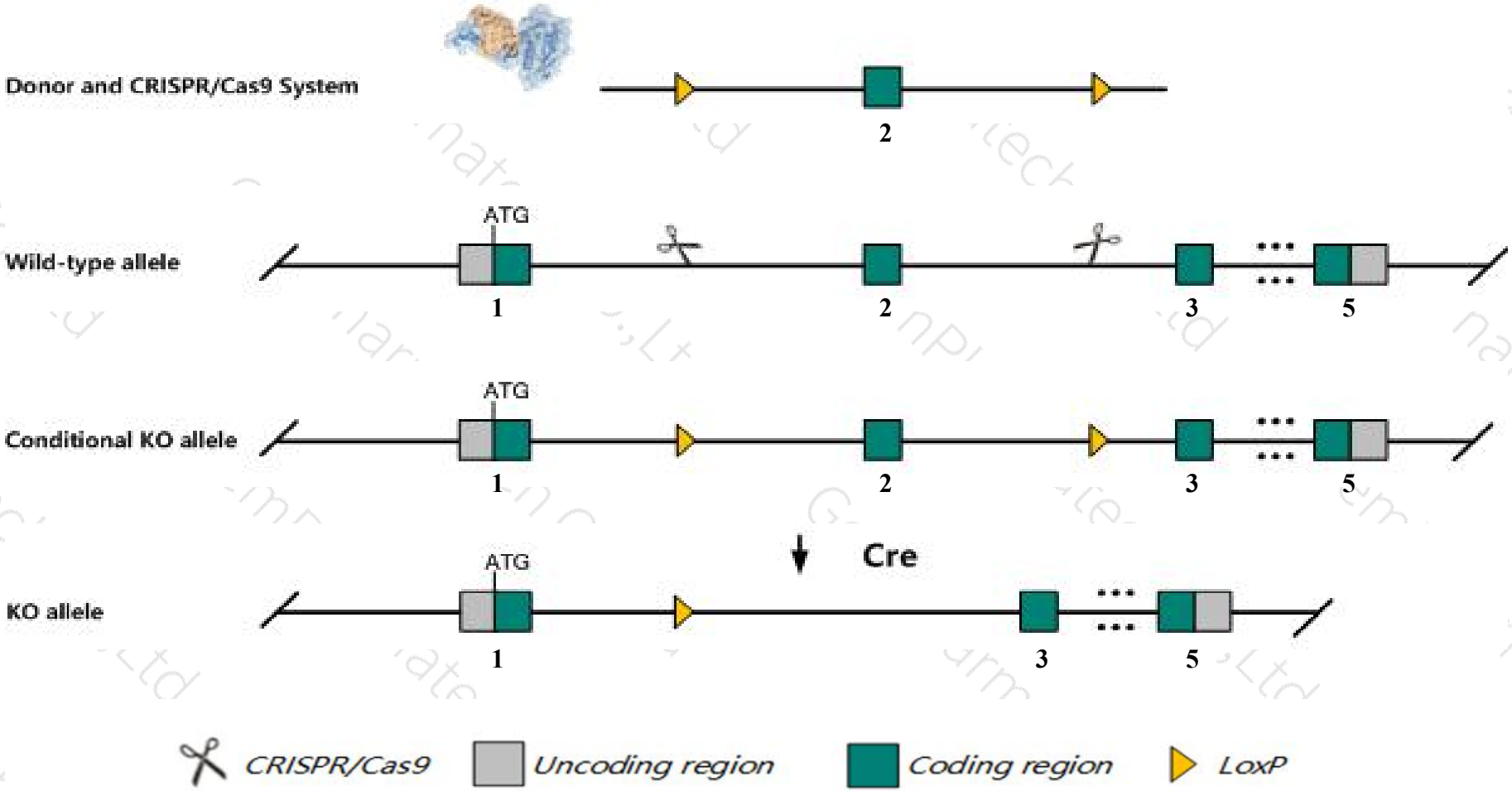
Design Date: 2019-7-19

Project Overview

Project Name	***Tnfrsf11b***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tnfrsf11b* gene. The schematic diagram is as follows:



Technical routes

- The *Tnfrsf11b* gene has 1 transcript. According to the structure of *Tnfrsf11b* gene, exon2 of *Tnfrsf11b-201* (ENSMUST00000079772.3) transcript is recommended as the knockout region.The region contains 367bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Tnfrsf11b* 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,Homozygote null mice have abnormal bone remodeling that results in severe osteoperosis with increased risk of fractures and growth retardation. Progressive hearing loss also results due to abnormal remodeling of the otic capsule.

➢ The *Tnfrsf11b* gene is located on the Chr15. 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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Tnfrsf11b tumor necrosis factor receptor superfamily, member 11b (osteoprotegerin) [Mus musculus (house mouse)]

Gene ID: 18383, updated on 25-Mar-2019

Summary

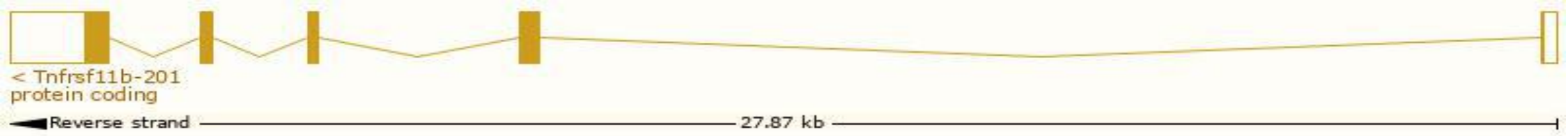
Official Symbol	Tnfrsf11b provided by MGI
Official Full Name	tumor necrosis factor receptor superfamily, member 11b (osteoprotegerin) provided by MGI
Primary source	MGI:MGI:109587
See related	Ensembl:ENSMUSG00000063727
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	OCIF, Opg, TR1
Expression	Ubiquitous expression in placenta adult (RPKM 3.7), liver E18 (RPKM 2.2) and 25 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

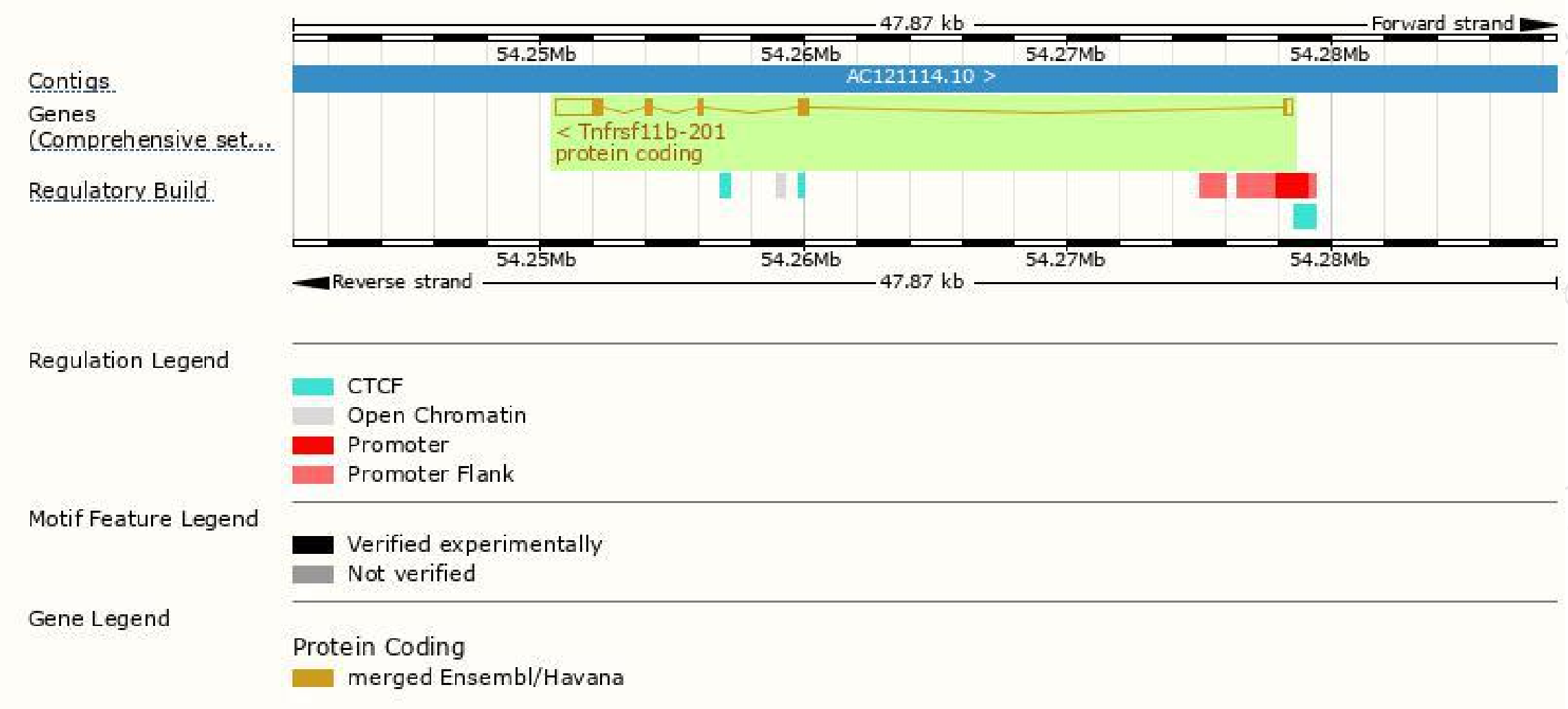
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tnfrsf11b-201	ENSMUST00000079772.3	2818	401aa	Protein coding	CCDS27468	O08712 Q3UK97	TSL:1 GENCODE basic APPRIS P1

The strategy is based on the design of *Tnfrsf11b-201* transcript,The transcription is shown below

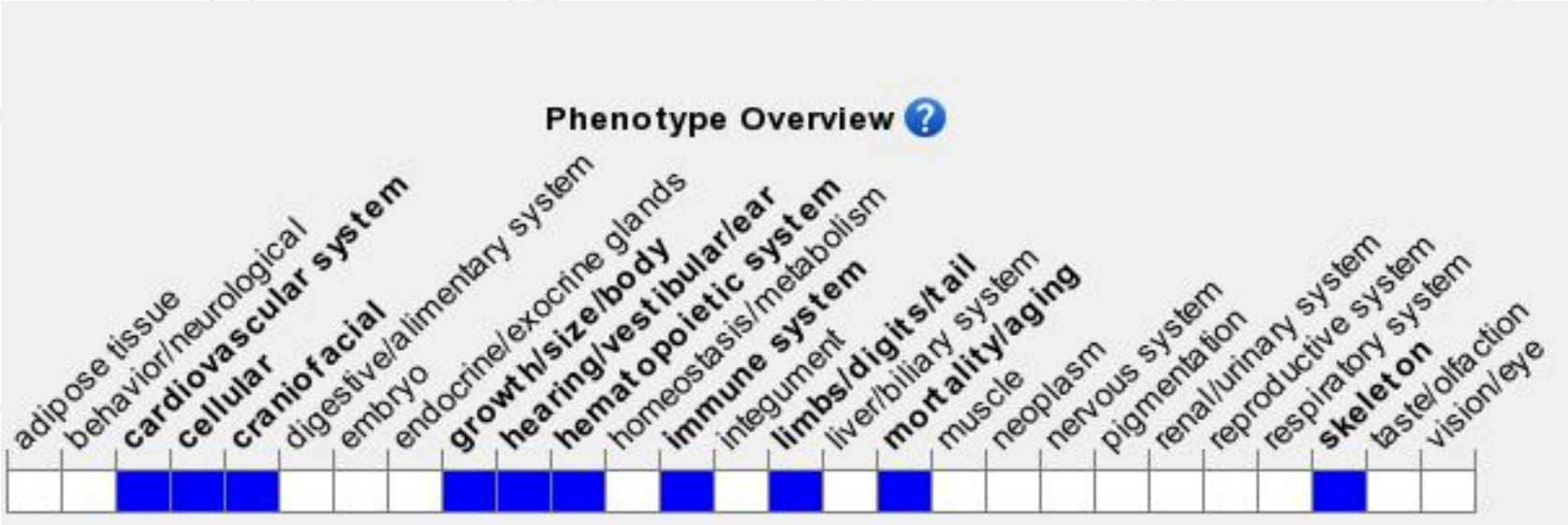


Genomic location distribution



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/).

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

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