

***Limd1* Cas9-KO Strategy**

Designer: Xueting Zhang

Reviwer: Yanhua Shen

Date: 2020-02-13

Project Overview

Project Name

Limd1

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Limd1* gene. The schematic diagram is as follows:



- The *Limd1* gene has 5 transcripts. According to the structure of *Limd1* gene, exon1-exon7 of *Limd1-201* (ENSMUST00000026269.3) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Limd1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit normal basal bone osteoclast numbers and bone density but are resistant to physiological and pathologic osteoclastogenic stimuli.
- The *Limd1* gene is located on the Chr9. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Limd1 LIM domains containing 1 [*Mus musculus* (house mouse)]

Gene ID: 29806, updated on 10-Oct-2019

Summary

- Official Symbol** Limd1 provided by [MGI](#)
- Official Full Name** LIM domains containing 1 provided by [MGI](#)
- Primary source** [MGI:MGI:1352502](#)
- See related** [Ensembl:ENSMUSG00000025239](#)
- 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** AW822033; D9Etd192e
- Expression** Ubiquitous expression in large intestine adult (RPKM 22.1), spleen adult (RPKM 19.7) and 28 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

Genomic context

Location: 9 F4; 9 74.0 cM See Limd1 in [Genome Data Viewer](#)

Exon count: 9

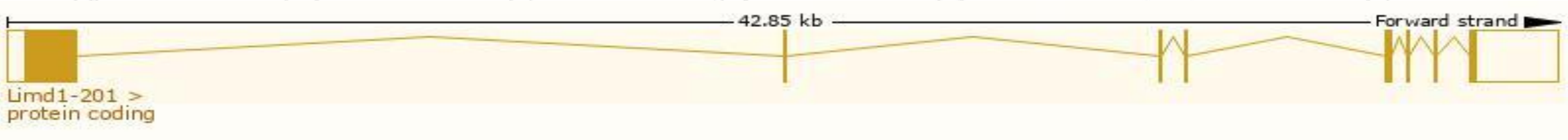
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	9	NC_000075.6 (123478661..123521552)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	9	NC_000075.5 (123387819..123430670)

Transcript information (Ensembl)

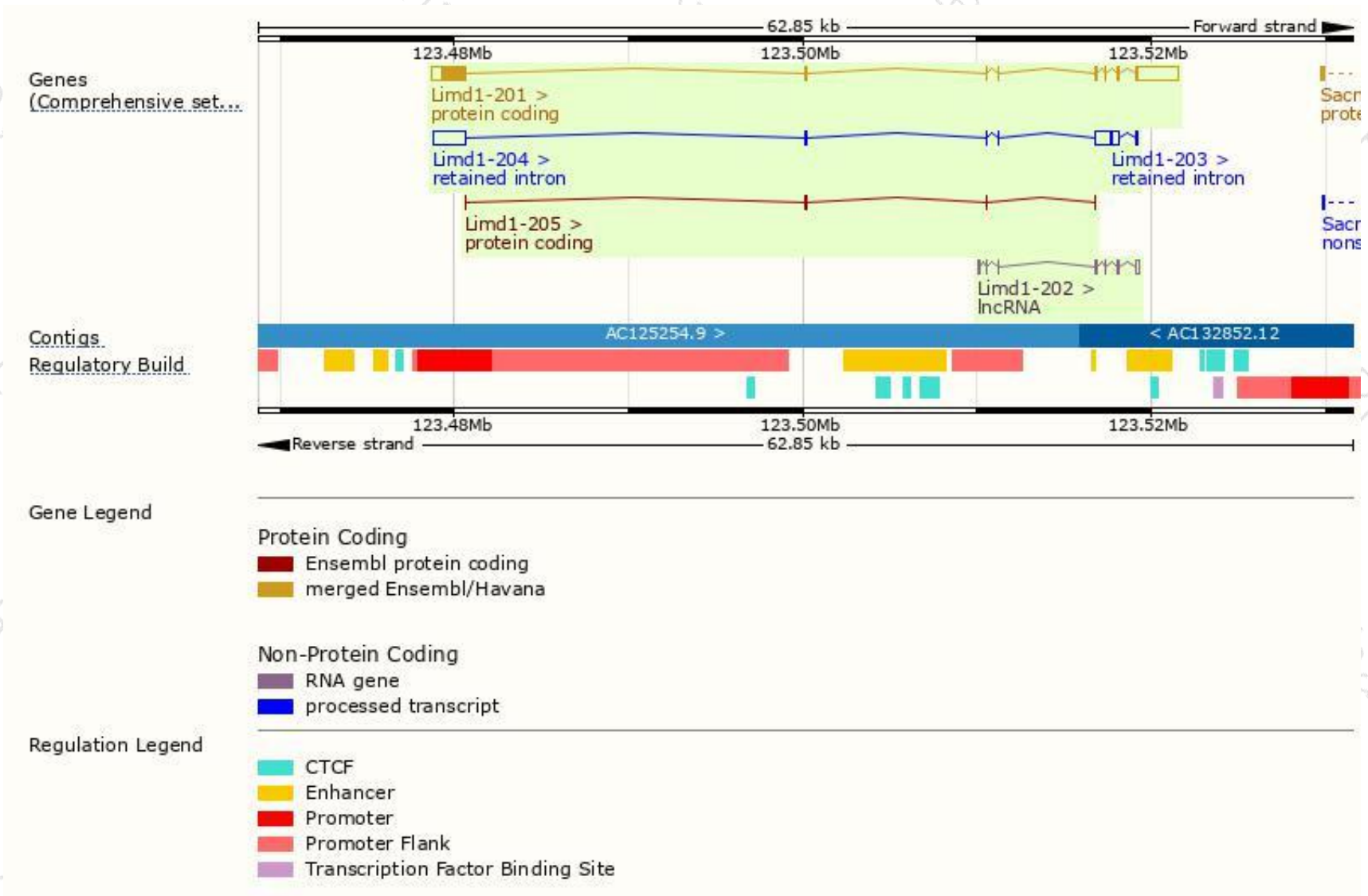
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Limd1-201	ENSMUST00000026269.3	4848	668aa	Protein coding	CCDS23660	Q9QXD8	TSL:1 GENCODE basic APPRIS P1
Limd1-205	ENSMUST00000217639.1	216	72aa	Protein coding	-	A0A1L1SUR8	CDS 5' and 3' incomplete TSL:5
Limd1-202	ENSMUST00000213278.1	699	No protein	Processed transcript	-	-	TSL:3
Limd1-204	ENSMUST00000216352.1	2986	No protein	Retained intron	-	-	TSL:1
Limd1-203	ENSMUST00000214309.1	580	No protein	Retained intron	-	-	TSL:2

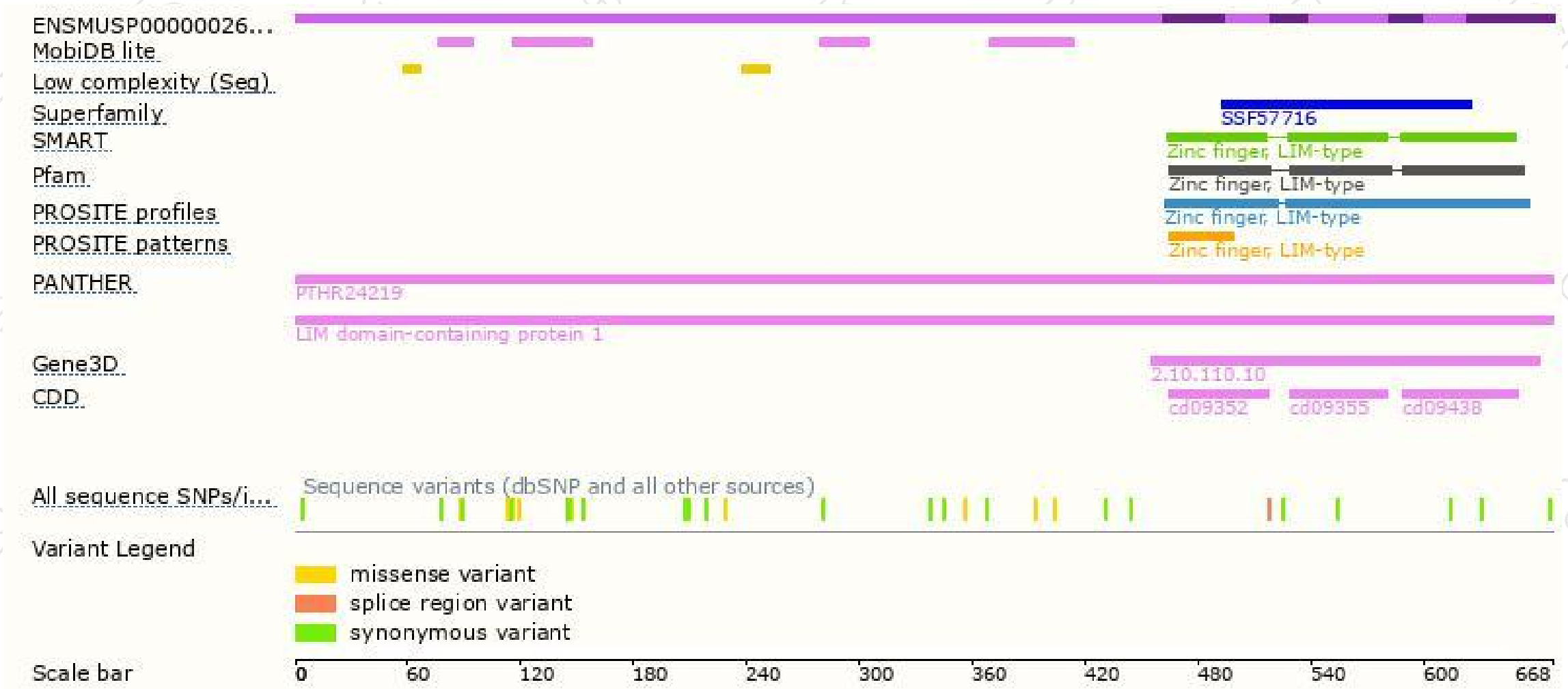
The strategy is based on the design of *Limd1-201* transcript,The transcription is shown below



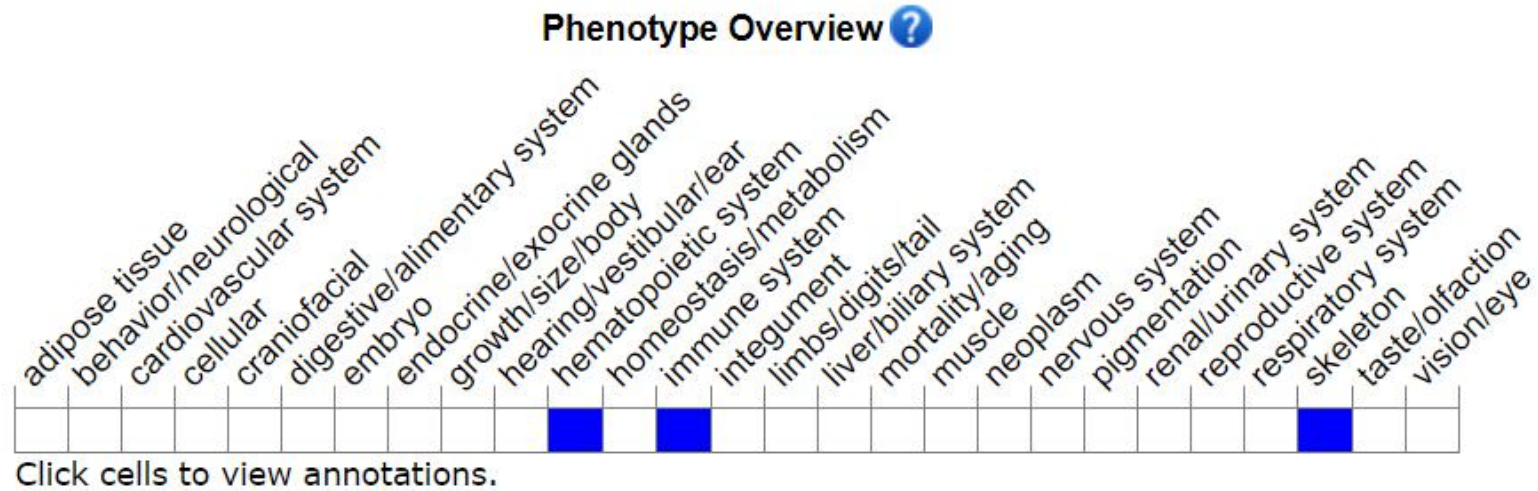
Genomic location distribution



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 normal basal bone osteoclast numbers and bone density but are resistant to physiological and pathologic osteoclastogenic stimuli.

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

Tel: 400-9660890

