

Limch1 Cas9-KO Strategy

Designer: Li ngyan Wu

Reviewer: Miaomiao Cui

Design Date: 2021-3-3

Project Overview

Project Name

Limch1

Project type

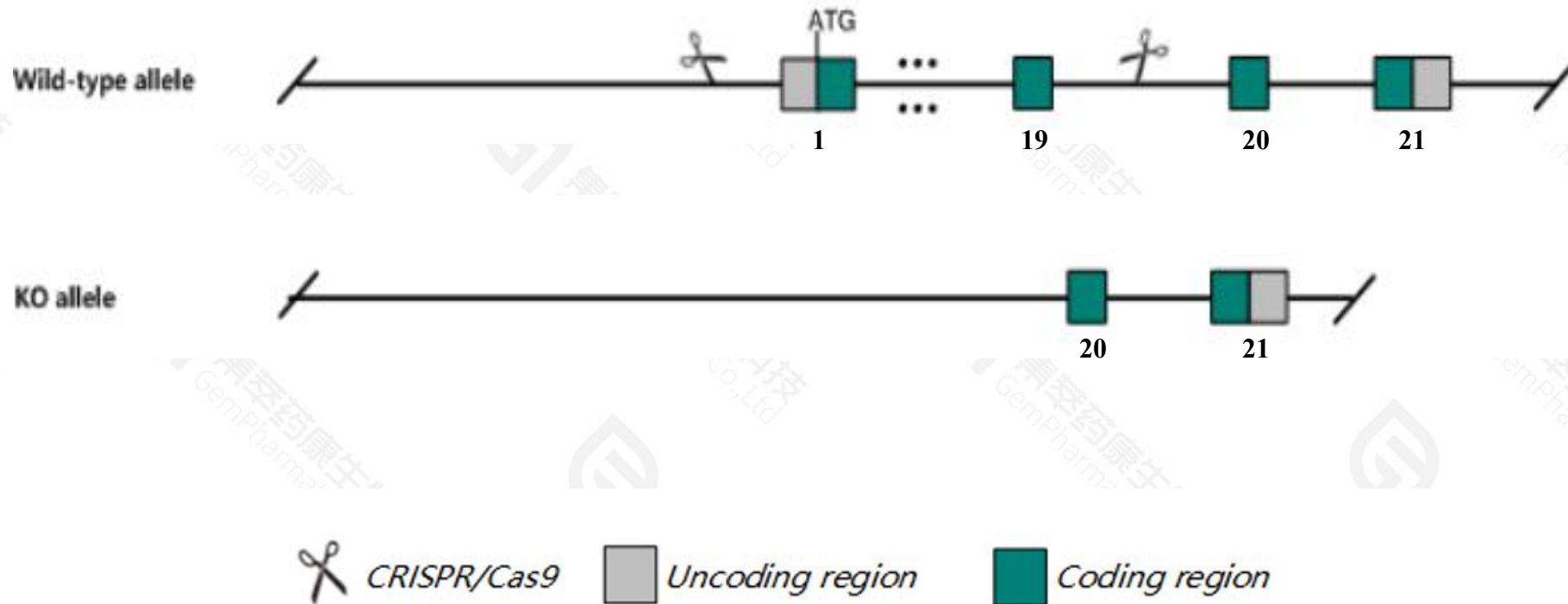
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Limch1* gene. The schematic diagram is as follows:



- The *Limch1* gene has 20 transcripts. According to the structure of *Limch1* gene, exon1-exon19 of *Limch1-201*(ENSMUST00000038188.13) 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 *Limch1* gene. The brief process is as follows: CRISPR/Cas9 system 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.

- *Gm43282&Gm15949&Gm15948&Gm42713* genes will be deleted.
- The *Limch1* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Limch1 LIM and calponin homology domains 1 [Mus musculus (house mouse)]

Gene ID: 77569, updated on 13-Mar-2020

Summary



Official Symbol Limch1 provided by [MGI](#)

Official Full Name LIM and calponin homology domains 1 provided by [MGI](#)

Primary source [MGI:MGI:1924819](#)

See related [Ensembl:ENSMUSG00000037736](#)

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 3732412D22Rik, mKIAA1102

Expression Biased expression in lung adult (RPKM 20.3), heart adult (RPKM 7.0) and 11 other tissues [See more](#)

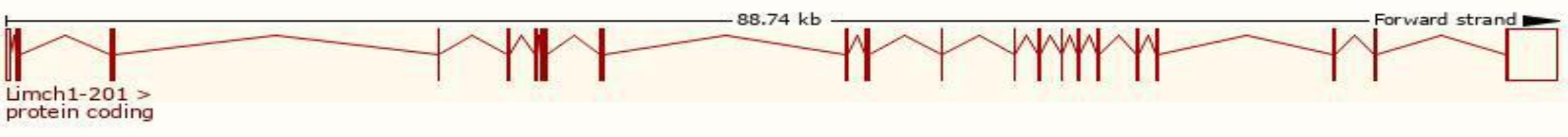
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

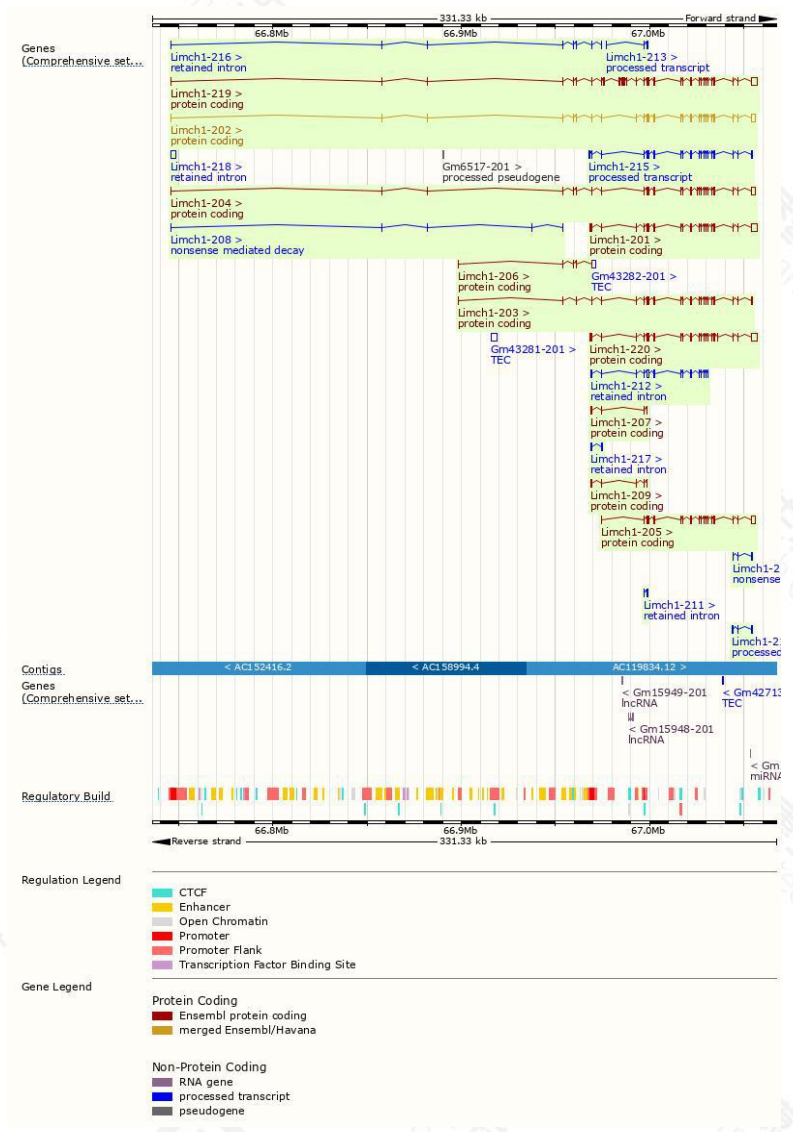
The gene has 20 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Limch1-201	ENSMUST00000038188.13	5903	901aa	Protein coding	CCDS57347	Q3UH68	TSL:1 GENCODE basic
Limch1-202	ENSMUST00000101164.10	5192	1057aa	Protein coding	CCDS39102	Q3UH68	TSL:5 GENCODE basic APPRIS P2
Limch1-219	ENSMUST00000238785.1	7498	1511aa	Protein coding	-	-	GENCODE basic APPRIS ALT2
Limch1-220	ENSMUST00000238993.1	5981	927aa	Protein coding	-	-	GENCODE basic
Limch1-204	ENSMUST00000118242.7	5050	1068aa	Protein coding	-	D3YU22	TSL:5 GENCODE basic APPRIS ALT2
Limch1-205	ENSMUST00000119854.7	4185	774aa	Protein coding	-	D3YU59	CDS 5' incomplete TSL:1
Limch1-203	ENSMUST00000117601.7	3157	898aa	Protein coding	-	D3Z589	TSL:5 GENCODE basic
Limch1-209	ENSMUST00000132991.4	876	268aa	Protein coding	-	F6X3N8	CDS 3' incomplete TSL:2
Limch1-207	ENSMUST00000127184.7	852	237aa	Protein coding	-	D3YV55	CDS 3' incomplete TSL:5
Limch1-206	ENSMUST00000122812.4	520	29aa	Protein coding	-	A0A0J9YU00	CDS 3' incomplete TSL:3
Limch1-214	ENSMUST00000153174.1	435	60aa	Nonsense mediated decay	-	F6W1Y9	CDS 5' incomplete TSL:2
Limch1-208	ENSMUST00000130228.1	360	83aa	Nonsense mediated decay	-	D6RHT2	TSL:5
Limch1-215	ENSMUST00000201322.3	3356	No protein	Processed transcript	-	-	TSL:5
Limch1-210	ENSMUST00000135334.2	735	No protein	Processed transcript	-	-	TSL:3
Limch1-213	ENSMUST00000147050.7	624	No protein	Processed transcript	-	-	TSL:3
Limch1-218	ENSMUST00000202830.1	2538	No protein	Retained intron	-	-	TSL:NA
Limch1-212	ENSMUST00000140428.7	2458	No protein	Retained intron	-	-	TSL:1
Limch1-216	ENSMUST00000201852.3	1018	No protein	Retained intron	-	-	TSL:3
Limch1-217	ENSMUST00000202048.1	786	No protein	Retained intron	-	-	TSL:2
Limch1-211	ENSMUST00000137394.1	680	No protein	Retained intron	-	-	TSL:2

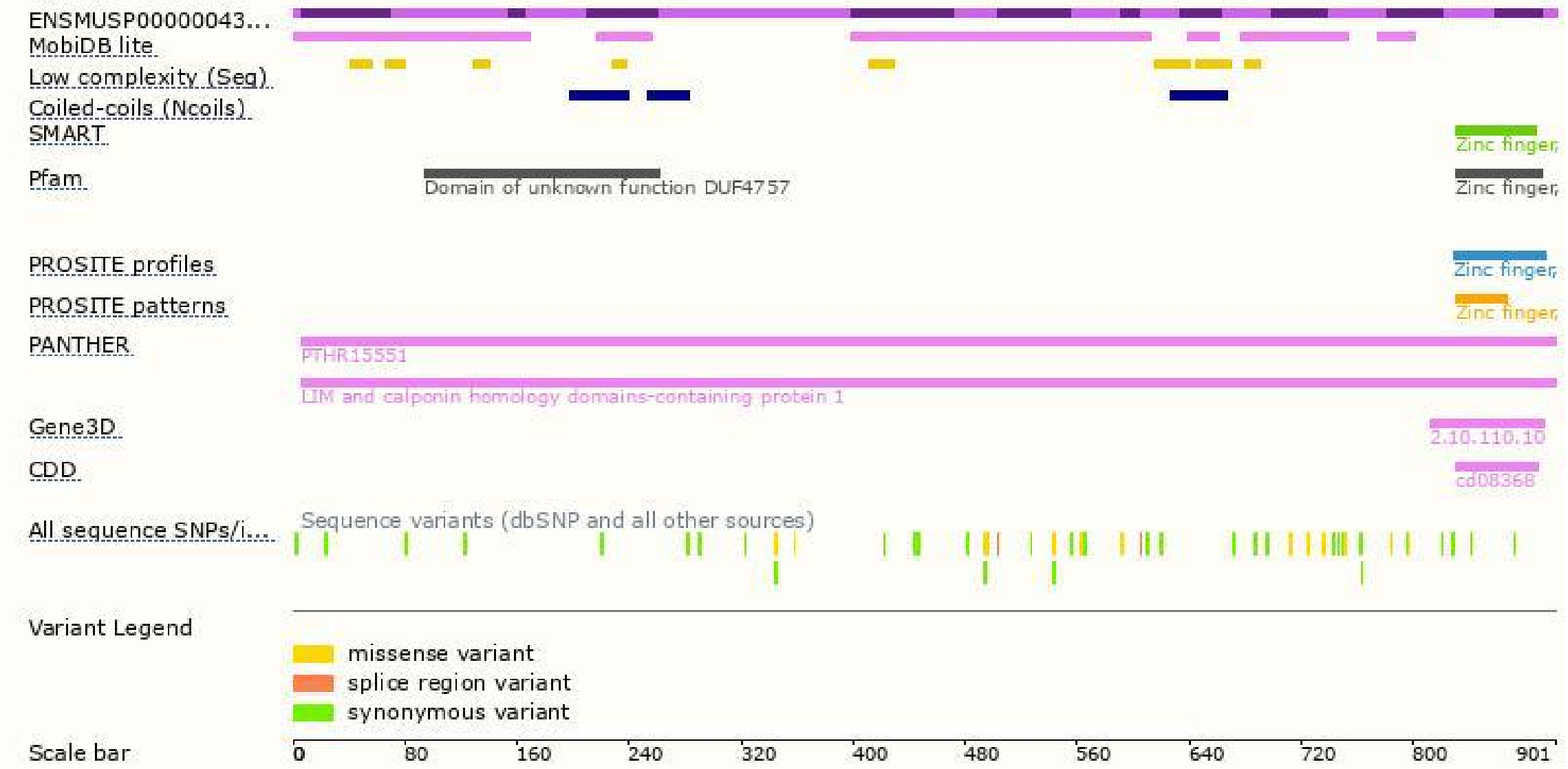
The strategy is based on the design of *Limch1-201* transcript,the transcription is shown below:



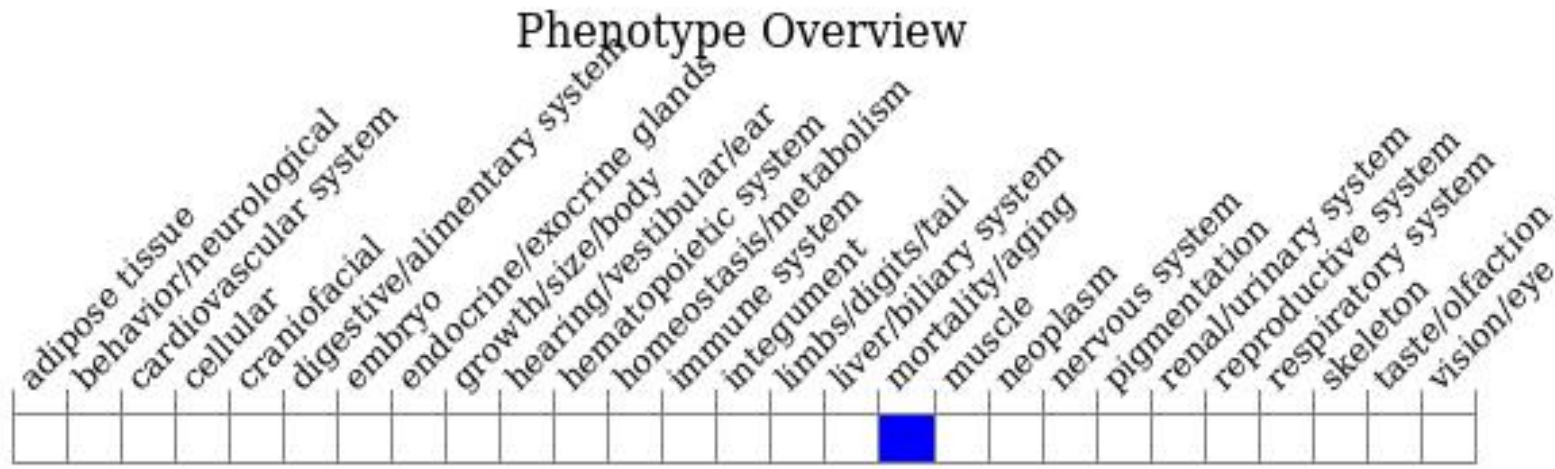
Genomic location distribution



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/>).

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

