Ldb2 Cas9-CKO Strategy

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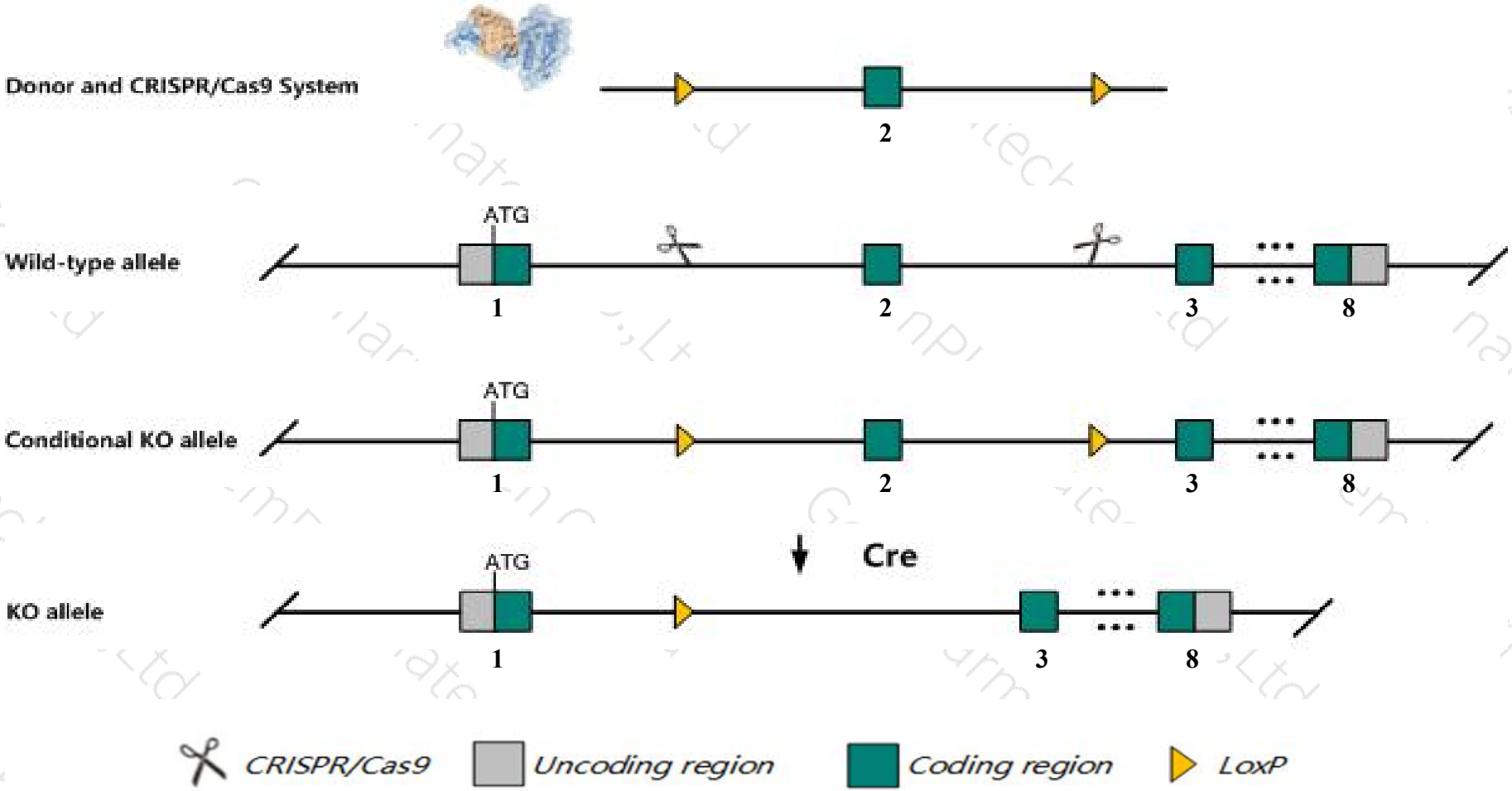
Project Overview

Project Name	***Ldb2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ldb2* gene. The schematic diagram is as follows:



Technical routes

- The *Ldb2* gene has 7 transcripts. According to the structure of *Ldb2* gene, exon2 of *Ldb2-204* (ENSMUST00000199256.4) transcript is recommended as the knockout region.The region contains 103bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Ldb2* 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,Homozygous mutation of this gene results in no obvious phenotype.
- Transcript *Ldb2*-202&206 may not be affected.
- The floxed region is near to the N-terminal of *Gm43504* gene,this strategy may influence the regulatory function of the N-terminal of *Gm43504* gene.
- The *Ldb2* 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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Ldb2 LIM domain binding 2 [*Mus musculus* (house mouse)]

Gene ID: 16826, updated on 24-Dec-2019

Summary

Official Symbol	Ldb2 provided by MGI
Official Full Name	LIM domain binding 2 provided by MGI
Primary source	MGI:MGI:894670
See related	Ensembl:ENSMUSG00000039706
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	Ldb3; CLIM1; CLP-36; AI035351; AW146358
Expression	Broad expression in lung adult (RPKM 18.1), limb E14.5 (RPKM 9.7) and 21 other tissues See more
Orthologs	human all

Genomic context

Location: 5; 5 B3

See Ldb2 in Genome Data Viewer

Exon count: 10

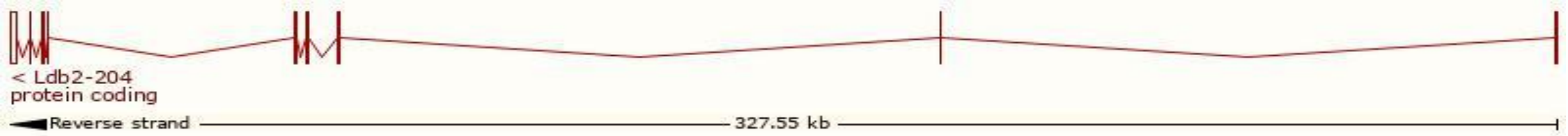
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	5	NC_000071.6 (44435955..44799759, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	5	NC_000071.5 (44863372..45190946, complement)

Transcript information（Ensembl）

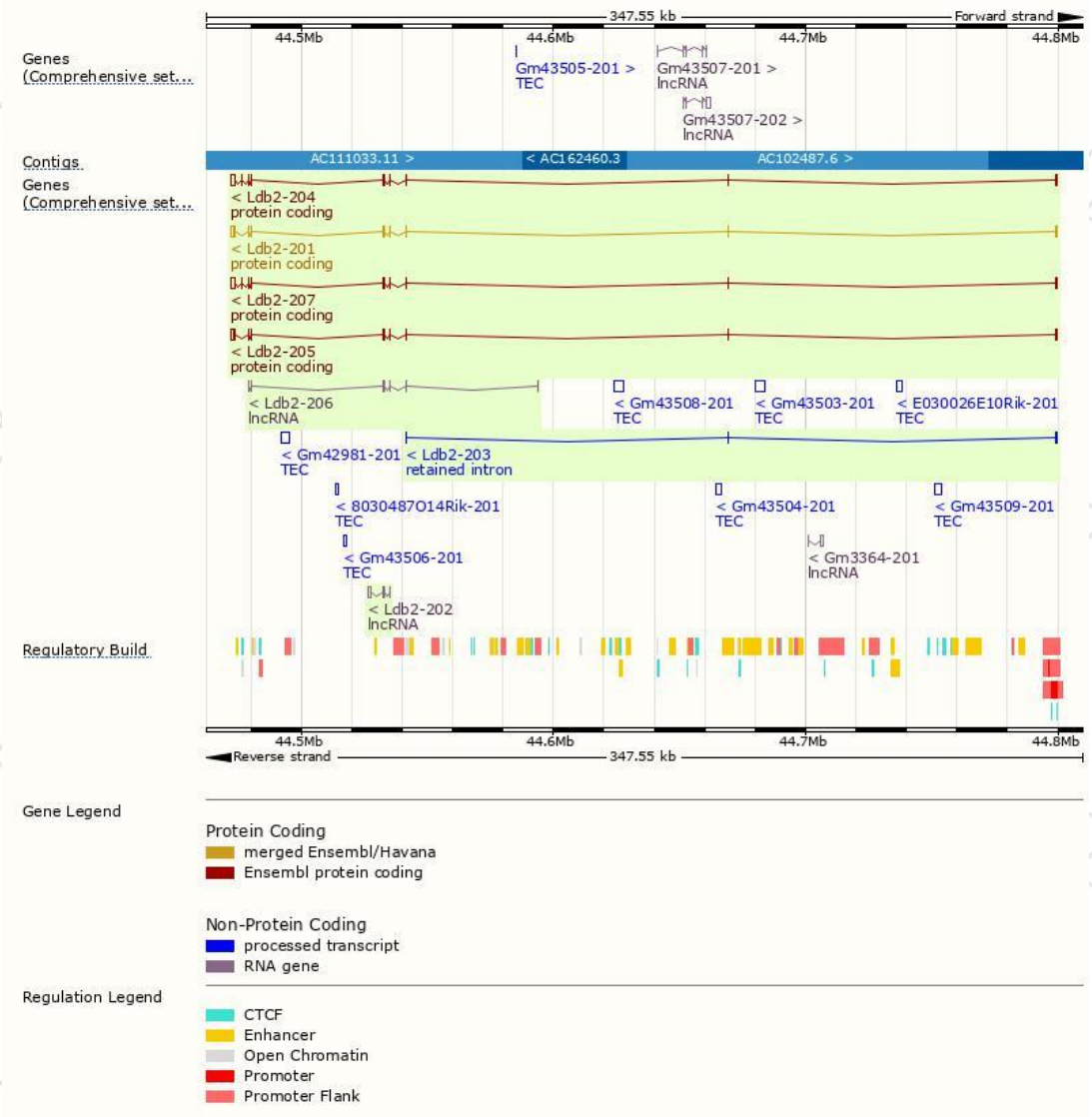
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ldb2-204	ENSMUST00000199256.4	2596	329aa	Protein coding	CCDS80278	O55203	TSL:1 GENCODE basic
Ldb2-207	ENSMUST00000199534.4	2541	331aa	Protein coding	CCDS80276	O55203	TSL:1 GENCODE basic
Ldb2-201	ENSMUST00000070748.9	2418	373aa	Protein coding	CCDS19271	O55203	TSL:1 GENCODE basic APPRIS P3
Ldb2-205	ENSMUST00000199261.1	2367	371aa	Protein coding	CCDS84878	A0A0G2JFS7	TSL:5 GENCODE basic APPRIS ALT1
Ldb2-203	ENSMUST00000198894.1	635	No protein	Retained intron	-	-	TSL:2
Ldb2-202	ENSMUST00000198356.1	780	No protein	lncRNA	-	-	TSL:3
Ldb2-206	ENSMUST00000199471.4	608	No protein	lncRNA	-	-	TSL:3

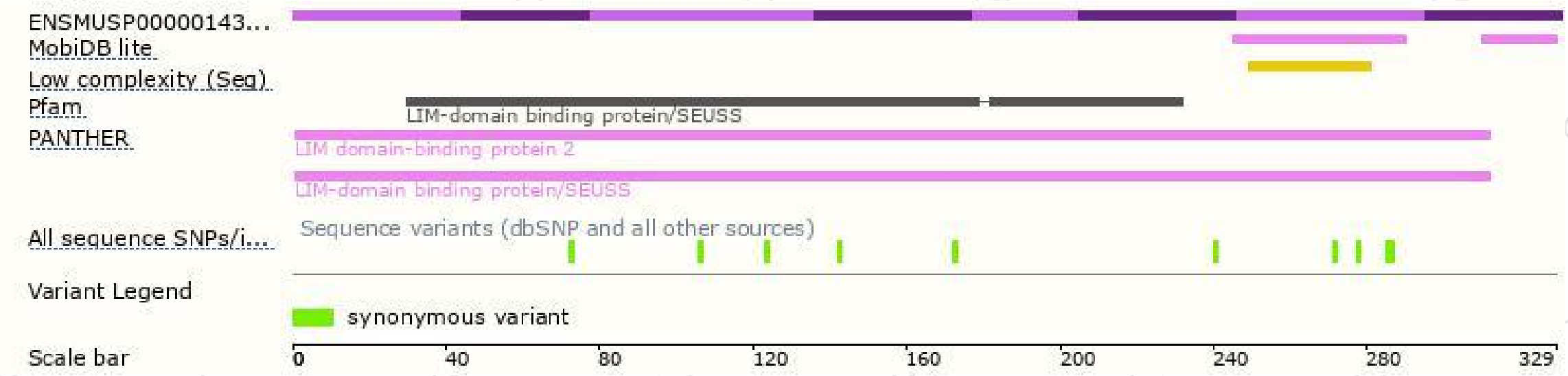
The strategy is based on the design of *Ldb2-204* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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