Lmo1 Cas9-CKO Strategy

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Project Overview

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Project Name	***Lmo1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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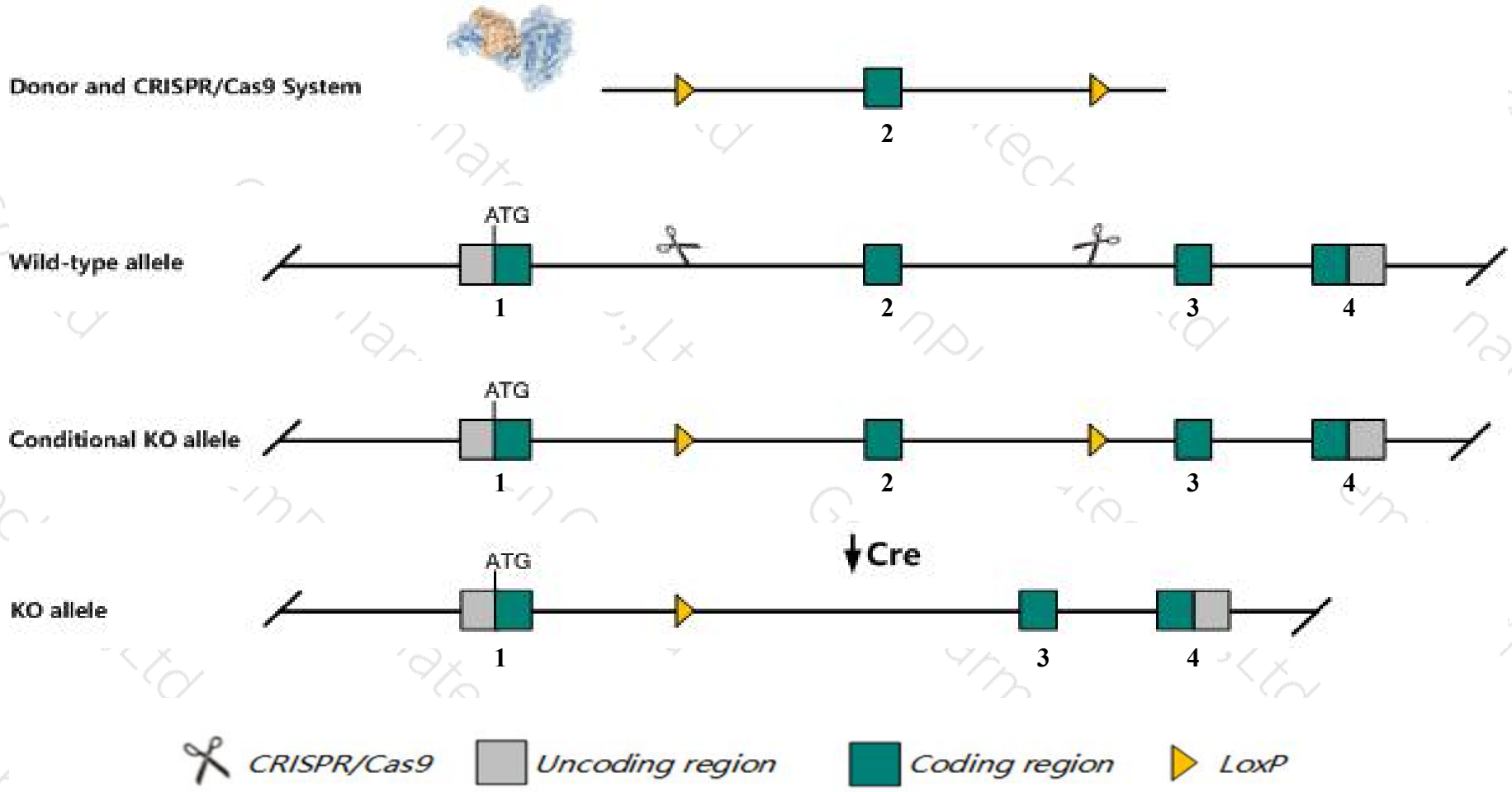
This model will use CRISPR/Cas9 technology to edit the *Lmo1* gene. The schematic diagram is as follows:



Technical routes

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- The *Lmo1* gene has 3 transcripts. According to the structure of *Lmo1* gene, exon2 of *Lmo1-201* (ENSMUST00000036992.8) transcript is recommended as the knockout region.The region contains 214bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Lmo1* 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 mutant mice show no overt phenotype.
- *Gm44781* gene may be destroyed together in this strategy.
- The *Lmo1* gene is located on the Chr7. 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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Lmo1 LIM domain only 1 [*Mus musculus* (house mouse)]

Gene ID: 109594, updated on 12-Aug-2019

Summary

Official Symbol	Lmo1 provided by MGI
Official Full Name	LIM domain only 1 provided by MGI
Primary source	MGI:MGI:102812
See related	Ensembl:ENSMUSG00000036111
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	Ttg1; Rbtn1; Rbtn-1
Expression	Broad expression in bladder adult (RPKM 28.1), whole brain E14.5 (RPKM 23.1) and 16 other tissues See more
Orthologs	human all

Genomic context

Location: 7 E3; 7 57.21 cM

See Lmo1 in Genome Data Viewer

Exon count: 5

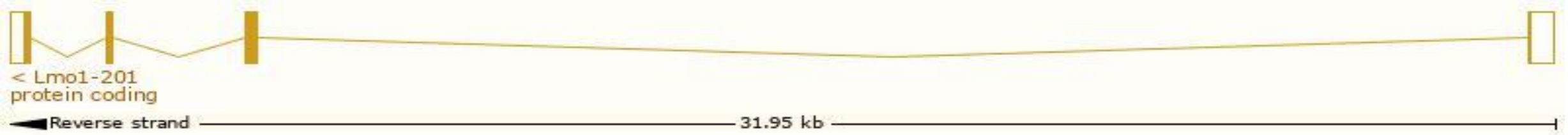
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	7	NC_000073.6 (109138565..109175360, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	7	NC_000073.5 (116282086..116313822, complement)

Transcript information（Ensembl）

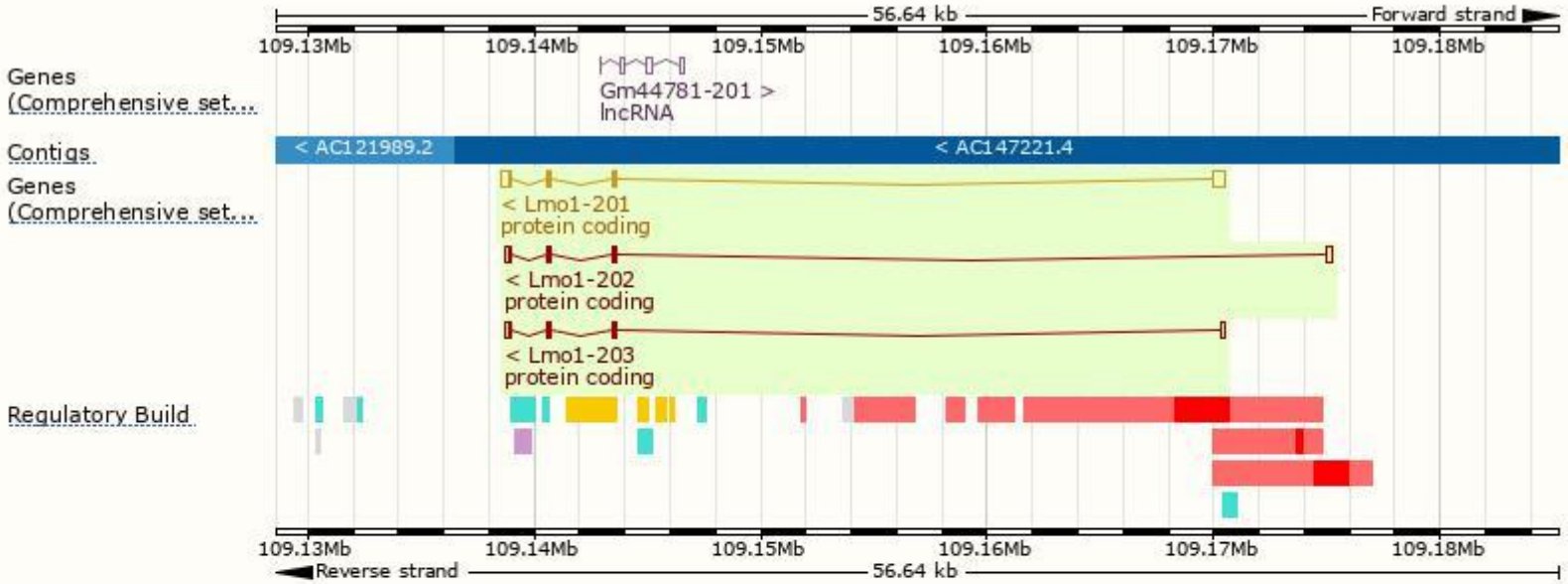
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Lmo1-201	ENSMUST00000036992.8	1282	156aa	Protein coding	CCDS40080	Q3UZX1 Q924W9	TSL:1 GENCODE basic APPRIS P3
Lmo1-202	ENSMUST00000207178.1	912	155aa	Protein coding	CCDS85378	A0A140LIB4	TSL:2 GENCODE basic APPRIS ALT1
Lmo1-203	ENSMUST00000208136.1	772	145aa	Protein coding	CCDS85377	A0A140LHX4	TSL:2 GENCODE basic APPRIS ALT1

The strategy is based on the design of *Lmo1-201* transcript,The transcription is shown below



Genomic location distribution



Gene Legend

Protein Coding
- merged Ensembl/Havana
- Ensembl protein coding

Non-Protein Coding
- RNA gene

Regulation Legend
- CTCF
- Enhancer
- Open Chromatin
- Promoter
- Promoter Flank
- Transcription Factor Binding Site

Protein domain

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