

***Lcmt1* Cas9-CKO Strategy**

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Project Overview

Project Name

Lcmt1

Project type

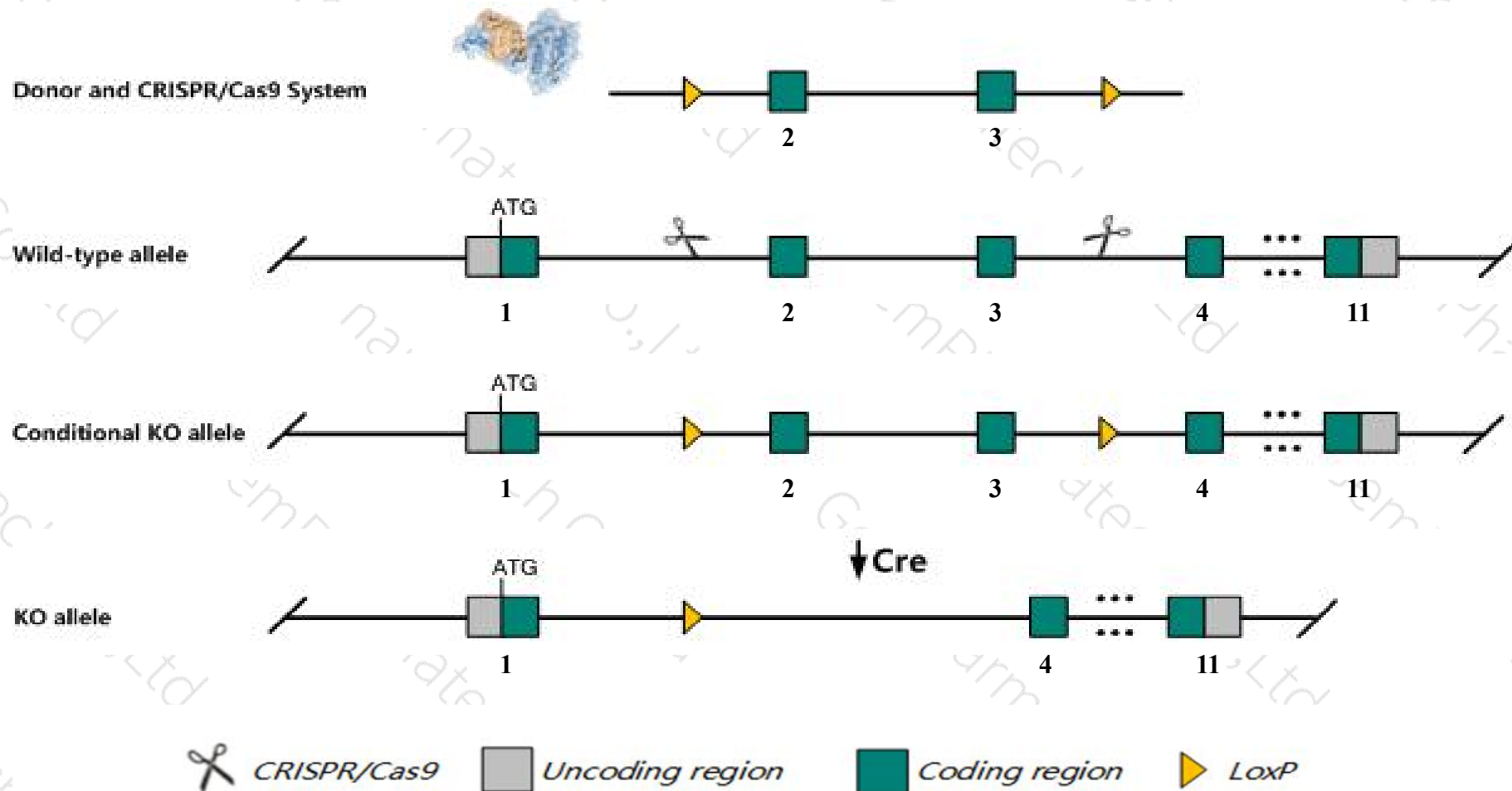
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Lcmt1* gene. The schematic diagram is as follows:



- The *Lcmt1* gene has 6 transcripts. According to the structure of *Lcmt1* gene, exon2-exon3 of *Lcmt1*-201(ENSMUST00000033025.6) 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 *Lcmt1* 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.

- According to the existing MGI data, mice homozygous for a gene trap allele are embryonic lethal. Mice homozygous for a hypomorphic gene trap allele exhibit partial embryonic lethality, insulin resistance and impaired glucose tolerance. Mice homozygous for a transgenic gene disruption exhibit kidney agenesis.
- Transcript 205 CDS 3' incomplete the influences is unknown.
- The *Lcmt1* 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)

Lcmt1 leucine carboxyl methyltransferase 1 [Mus musculus (house mouse)]

Gene ID: 30949, updated on 13-Mar-2020

Summary



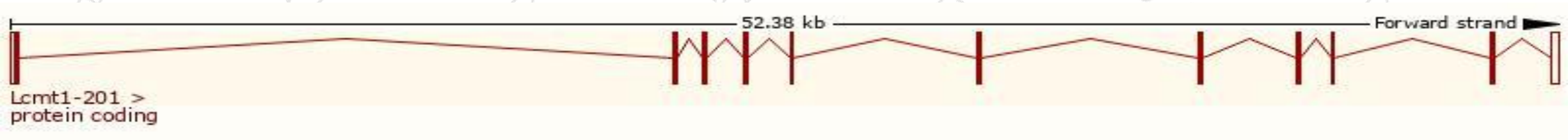
Official Symbol	Lcmt1 provided by MGI
Official Full Name	leucine carboxyl methyltransferase 1 provided by MGI
Primary source	MGI:MGI:1353593
See related	Ensembl:ENSMUSG00000030763
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AL033290, LCMT-1, Lcmt
Expression	Ubiquitous expression in CNS E18 (RPKM 17.1), cortex adult (RPKM 13.4) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

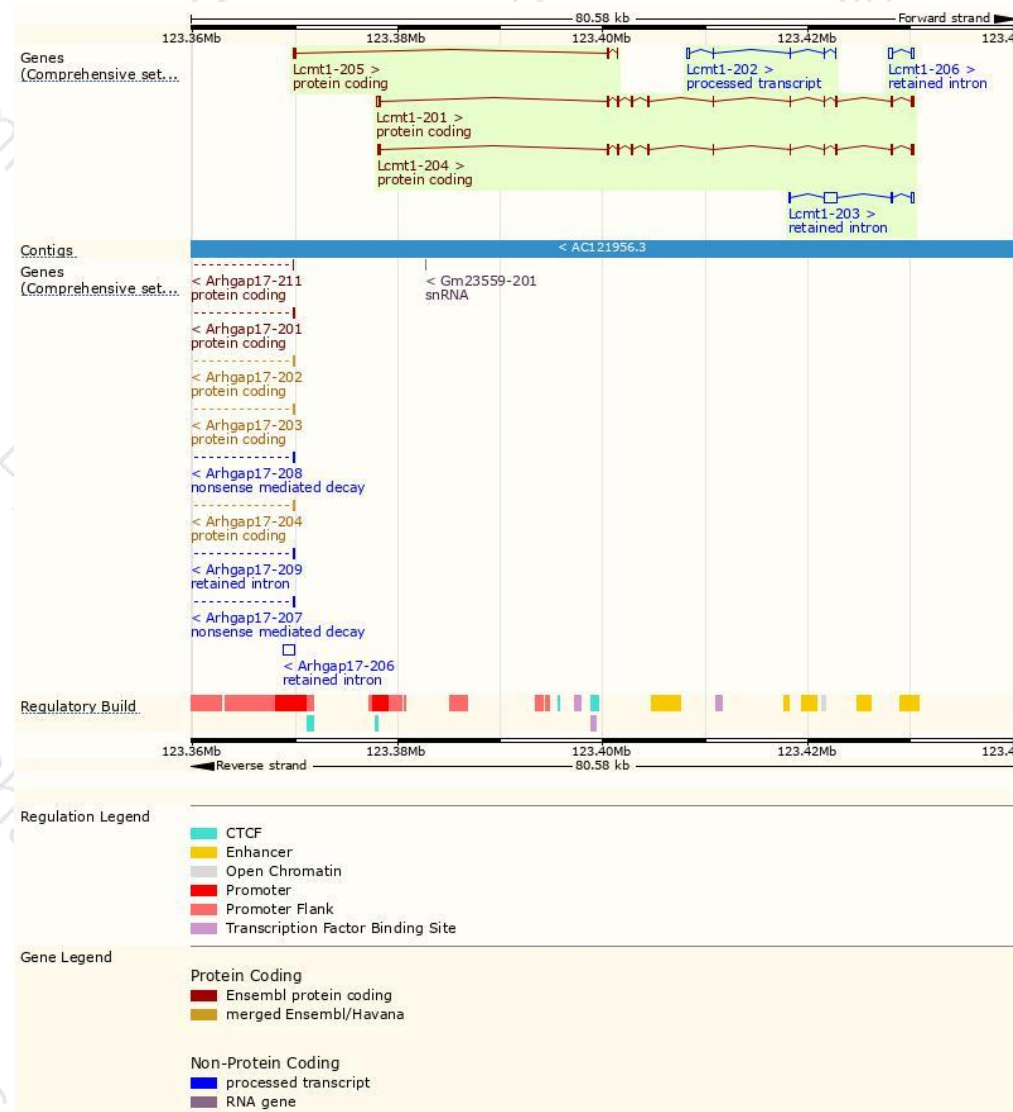
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Lcmt1-201	ENSMUST00000033025.6	1369	332aa	Protein coding	CCDS40118	A2RTH5	TSL:1 GENCODE basic APPRIS P2
Lcmt1-204	ENSMUST00000206574.1	1286	332aa	Protein coding	-	A0A0U1RNF2	TSL:5 GENCODE basic APPRIS ALT2
Lcmt1-205	ENSMUST00000206721.1	365	121aa	Protein coding	-	A0A0U1RPZ5	CDS 3' incomplete TSL:3
Lcmt1-202	ENSMUST00000205880.1	632	No protein	Processed transcript	-	-	TSL:3
Lcmt1-203	ENSMUST00000206488.1	1767	No protein	Retained intron	-	-	TSL:1
Lcmt1-206	ENSMUST00000206727.1	548	No protein	Retained intron	-	-	TSL:2

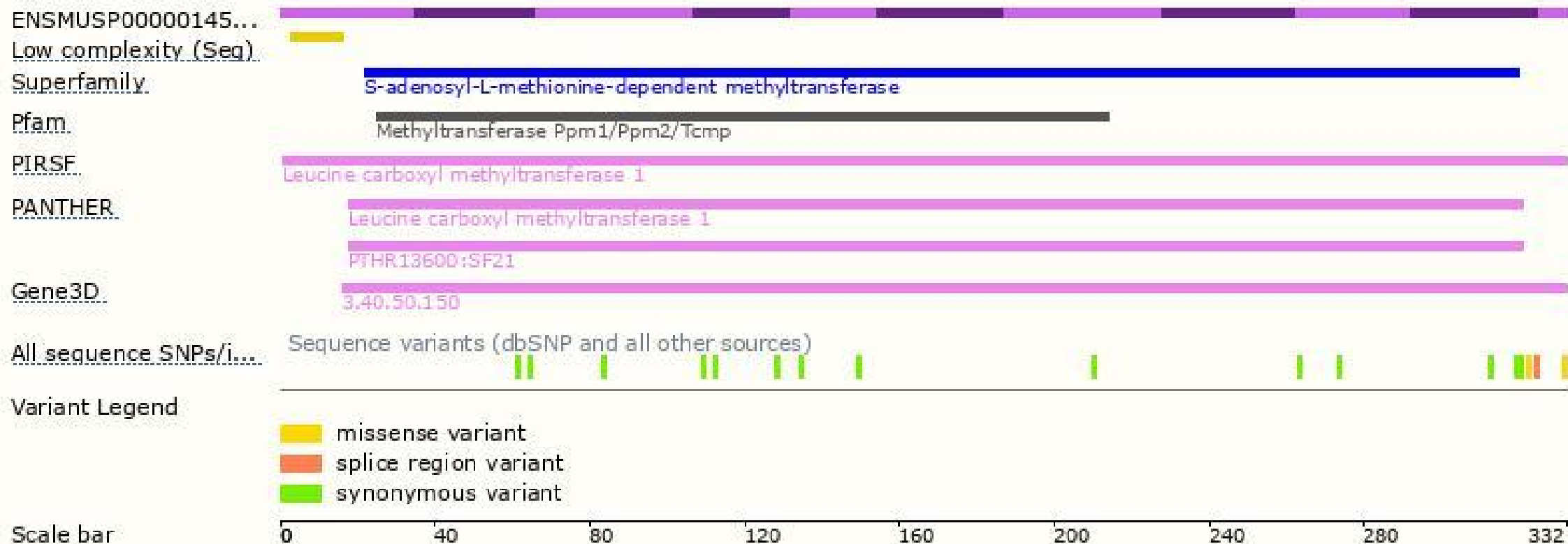
The strategy is based on the design of *Lcmt1-201* transcript,the transcription is shown below:



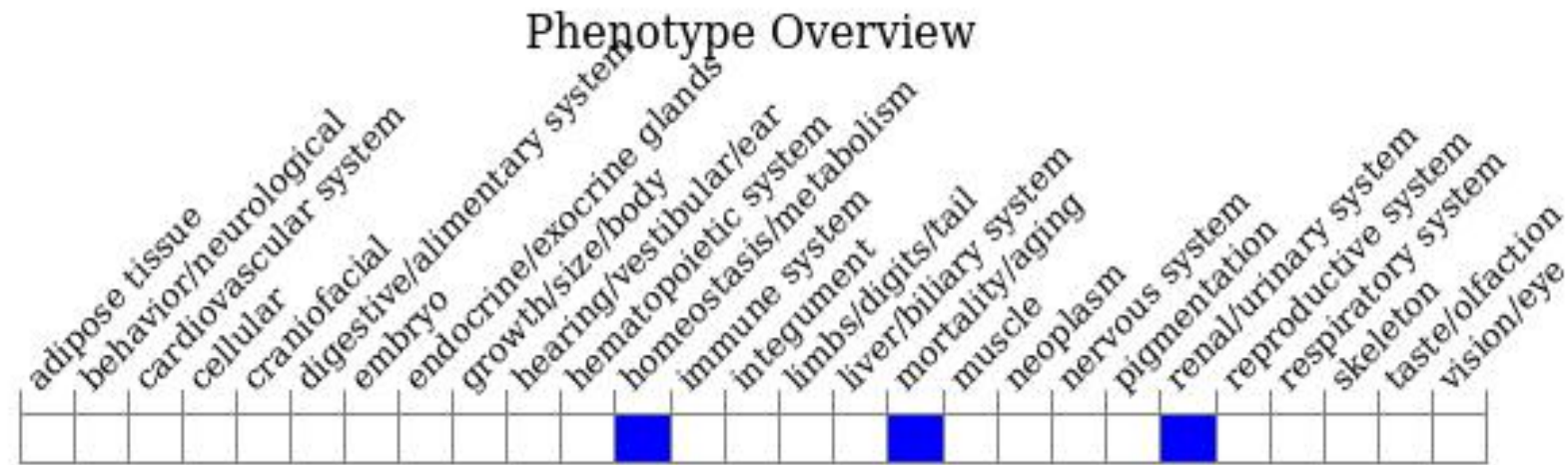
Genomic location distribution



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 gene trap allele are embryonic lethal. Mice homozygous for a hypomorphic gene trap allele exhibit partial embryonic lethality, insulin resistance and impaired glucose tolerance. Mice homozygous for a transgenic gene disruption exhibit kidney agenesis.

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

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