

Lmnb1 Cas9-KO Strategy

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Project Overview

Project Name

Lmnb1

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Lmnb1* gene has 2 transcripts. According to the structure of *Lmnb1* gene, exon2-exon5 of *Lmnb1-201* (ENSMUST00000025486.8) transcript is recommended as the knockout region. The region contains 580bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Lmnb1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, homozygous null mice display neonatal lethality with respiratory distress, abnormal lung, craniofacial, and skeletal morphology, reduced embryo size, impaired cellular proliferation and differentiation, and abnormal nuclear morphology.
- The *Lmnbl* gene is located on the Chr18. 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)

Lmnb1 lamin B1 [*Mus musculus* (house mouse)]

Gene ID: 16906, updated on 12-Aug-2019

Summary

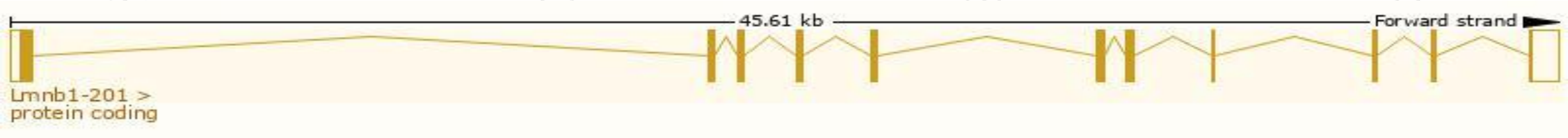
Official Symbol	Lmnb1 provided by MGI
Official Full Name	lamin B1 provided by MGI
Primary source	MGI:MGI:96795
See related	Ensembl:ENSMUSG00000024590
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Broad expression in CNS E11.5 (RPKM 89.9), thymus adult (RPKM 41.9) and 17 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

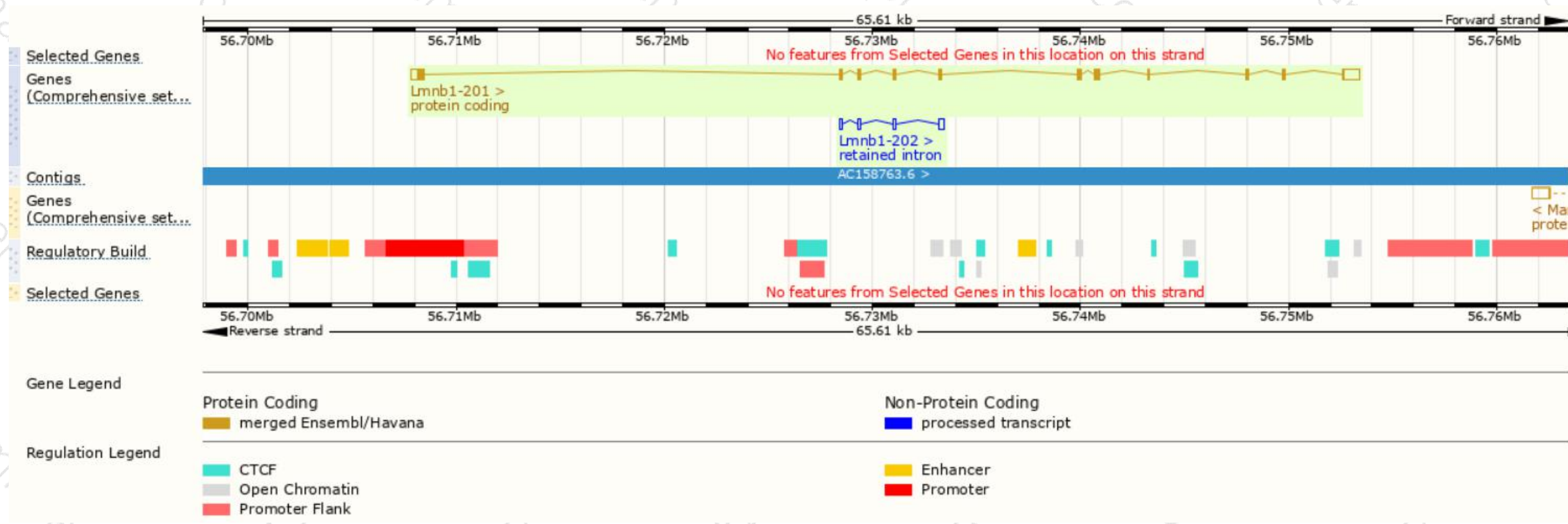
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Lmnb1-201	ENSMUST00000025486.8	2843	588aa	Protein coding	CCDS29261	P14733	TSL:1 GENCODE basic APPRIS P1
Lmnb1-202	ENSMUST00000128651.1	659	No protein	Retained intron	-	-	TSL:2

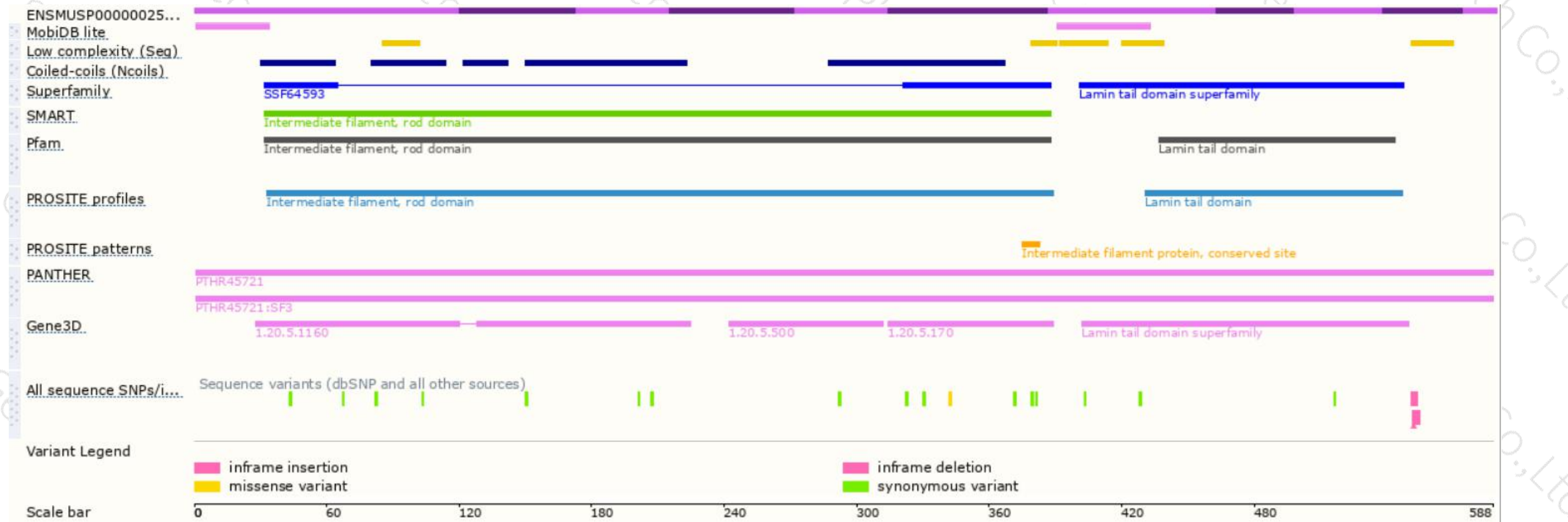
The strategy is based on the design of *Lmnb1-201* transcript,The transcription is shown below:



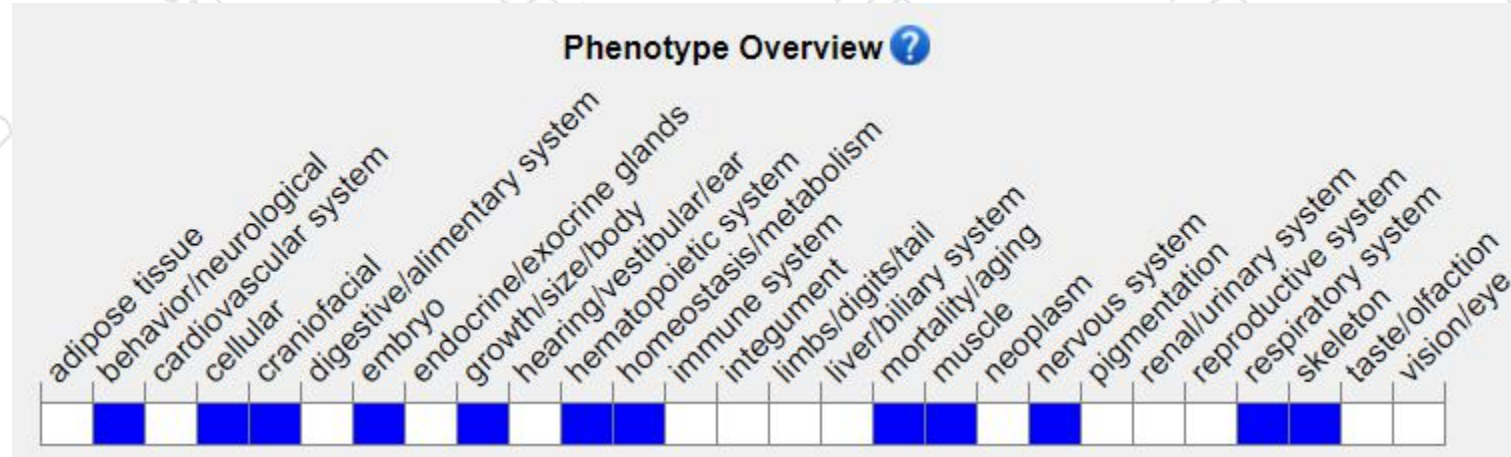
Genomic location distribution



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, homozygous null mice display neonatal lethality with respiratory distress, abnormal lung, craniofacial, and skeletal morphology, reduced embryo size, impaired cellular proliferation and differentiation, and abnormal nuclear morphology.

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

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