

***Lamb1* Cas9-KO Strategy**

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Project Overview

Project Name

Lamb1

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Lamb1* gene. The schematic diagram is as follows:



- The *Lamb1* gene has 7 transcripts. According to the structure of *Lamb1* gene, exon2-exon7 of *Lamb1-201* (ENSMUST00000002979.14) transcript is recommended as the knockout region. The region contains 842bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Lamb1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Embryos homozygous for a gene trapped allele lack basement membranes and fail to survive past E5.5. Mice heterozygous for a spontaneous mutation exhibit dystonia with impaired neuron firing.
- Transcript *Lamb1*-207 may not be affected.
- The *Lamb1* gene is located on the Chr12. 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)

Lamb1 laminin B1 [*Mus musculus* (house mouse)]

Gene ID: 16777, updated on 25-Oct-2019

Summary

- Official Symbol** Lamb1 provided by MGI
- Official Full Name** laminin B1 provided by MGI
- Primary source** [MGI:MGI:96743](#)
- See related** [Ensembl:ENSMUSG00000002900](#)
- 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** C77966; C80098; C81607; Lamb-1; Lamb1-1; D130003D08Rik
- Expression** Broad expression in ovary adult (RPKM 32.7), placenta adult (RPKM 32.3) and 22 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

Genomic context

Location: 12 A2; 12 13.39 cM [See Lamb1 in Genome Data Viewer](#)

Exon count: 35

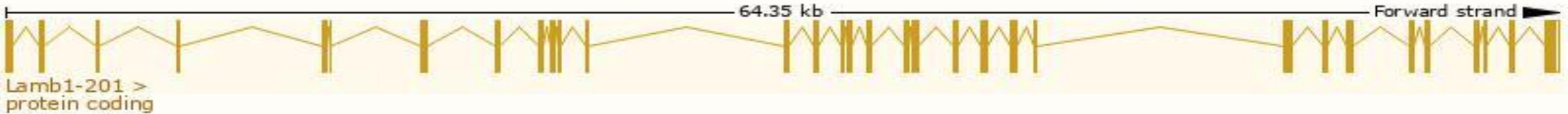
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	12	NC_000078.6 (31265146..31329644)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	12	NC_000078.5 (31950159..32014504)

Transcript information (Ensembl)

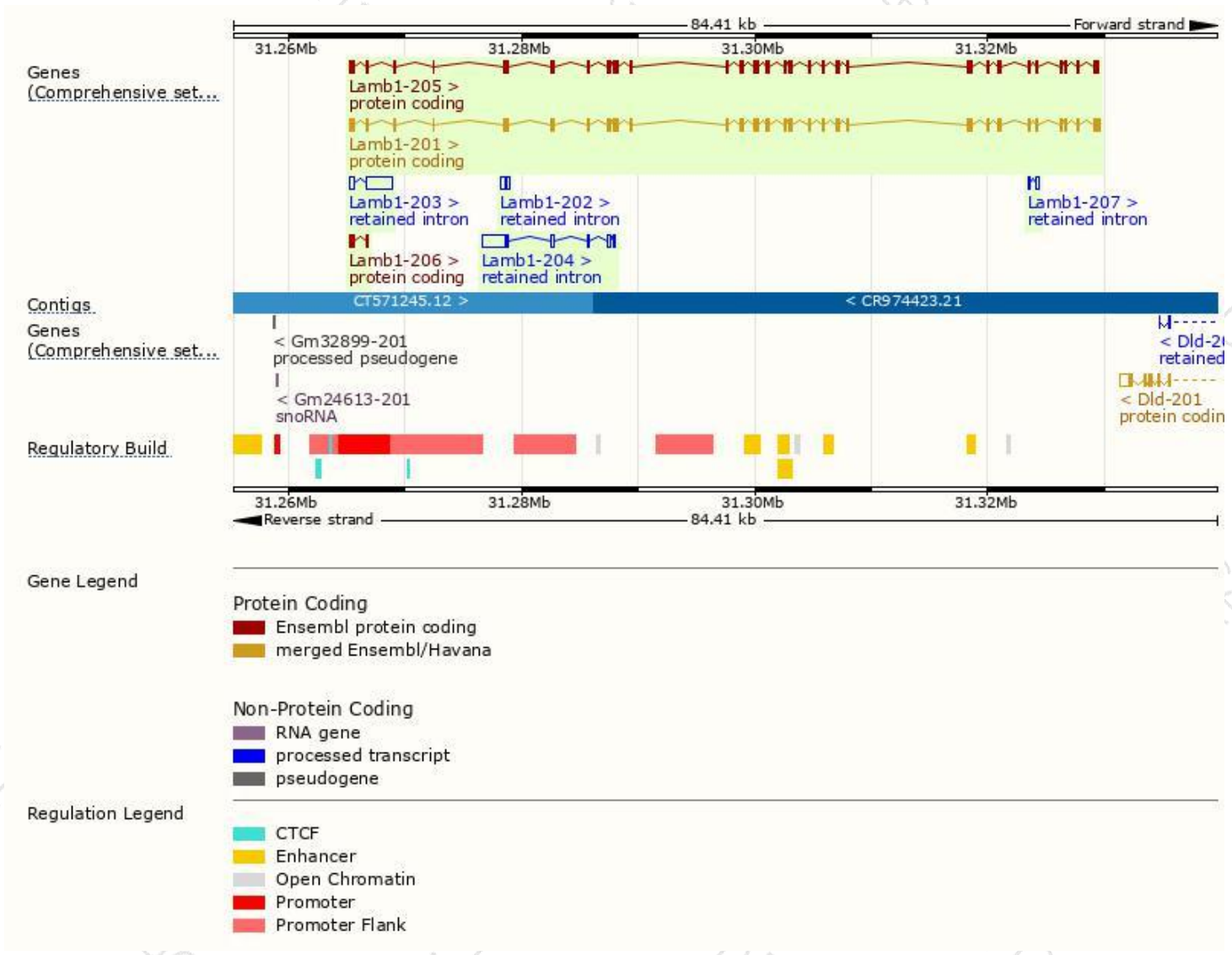
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Lamb1-201	ENSMUST00000002979.14	5784	1834aa	Protein coding	CCDS25862	E9QN70	TSL:1 GENCODE basic
Lamb1-205	ENSMUST00000169088.7	5557	1786aa	Protein coding	-	P02469	TSL:5 GENCODE basic APPRIS P1
Lamb1-206	ENSMUST00000170495.1	386	87aa	Protein coding	-	E9Q339	CDS 3' incomplete TSL:3
Lamb1-204	ENSMUST00000169065.1	2680	No protein	Retained intron	-	-	TSL:1
Lamb1-203	ENSMUST00000164228.1	2478	No protein	Retained intron	-	-	TSL:1
Lamb1-202	ENSMUST00000164009.1	680	No protein	Retained intron	-	-	TSL:2
Lamb1-207	ENSMUST00000172134.1	424	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Lamb1-201* transcript,The transcription is shown below



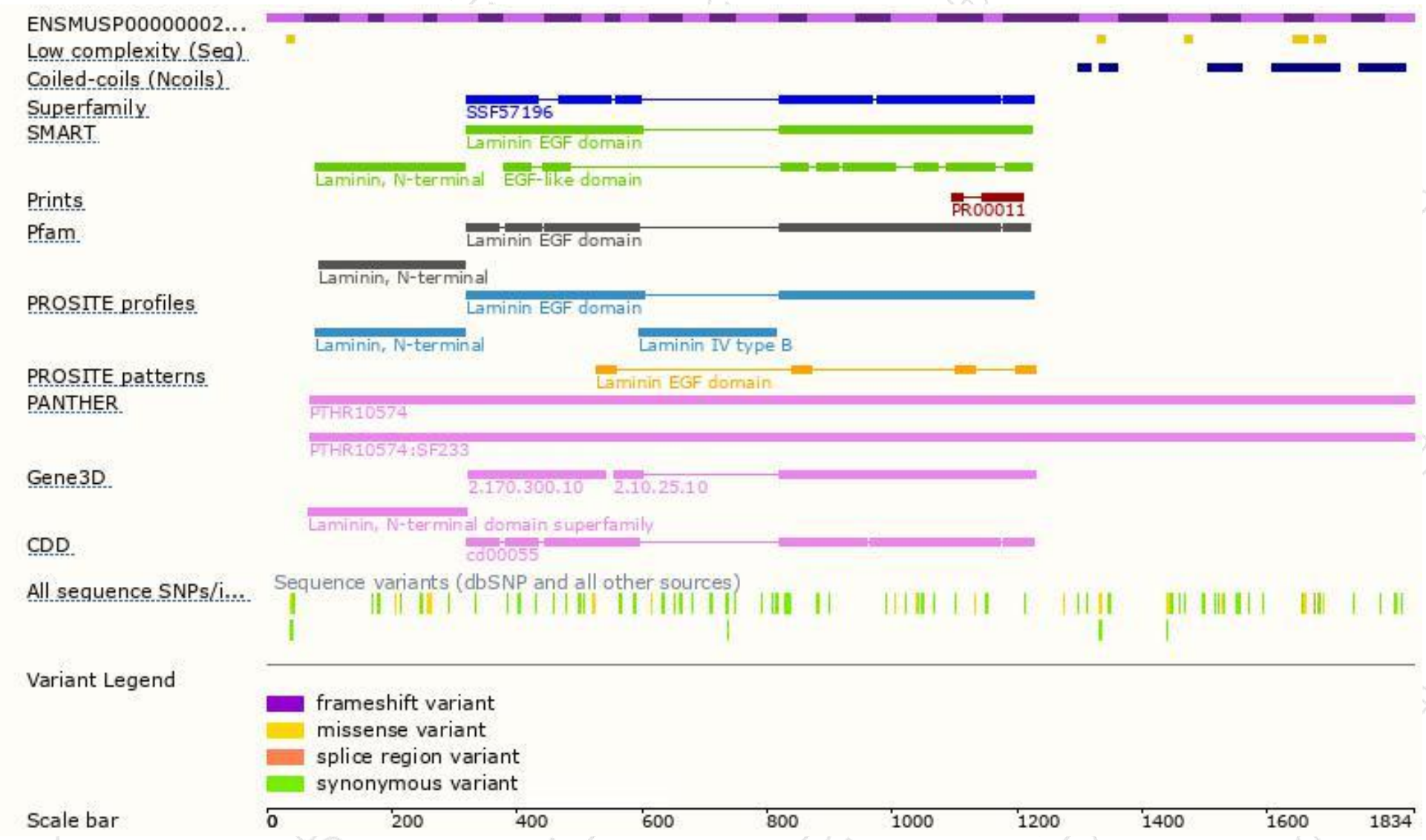
Genomic location distribution



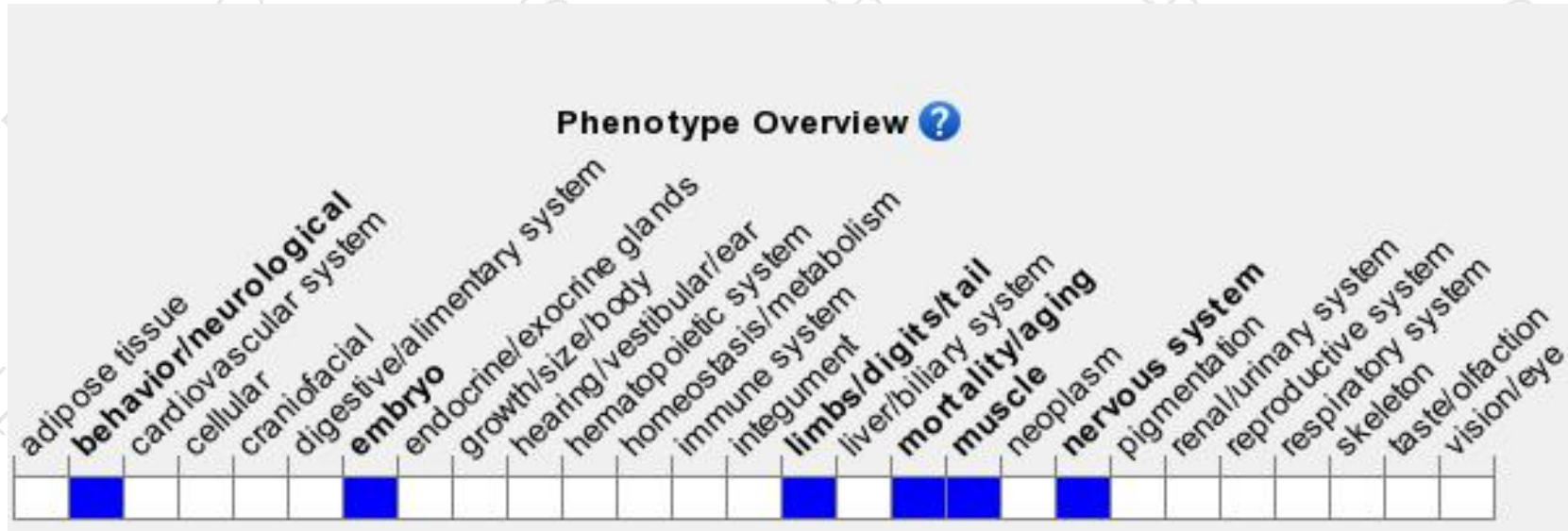
Protein domain



集萃药康
GemPharmatech



Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(<http://www.informatics.jax.org/>).

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

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