Lactb Cas9-KO Strategy

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Overview
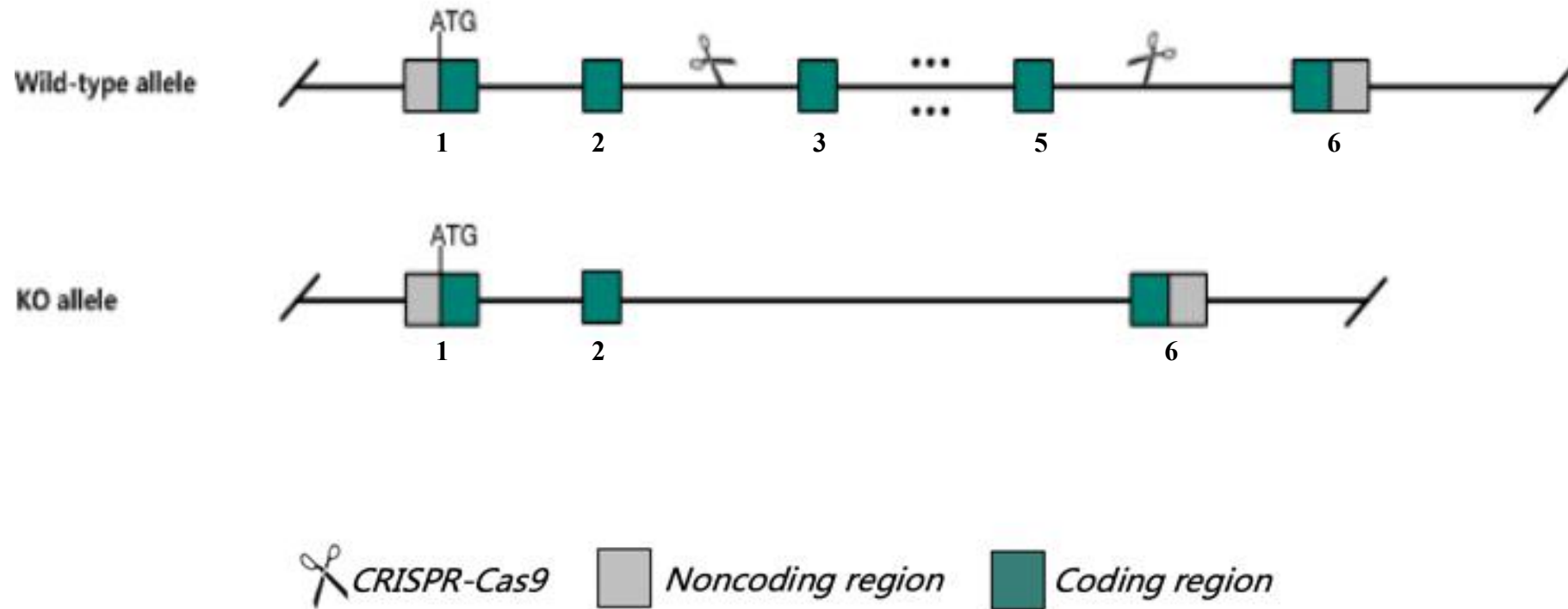
Target Gene Name

- Lactb

Project Type

- Cas9-KO

Genetic Background

- C57BL/6JGpt

Strain Strategy

Technical Information

- The *Lactb* gene has 2 transcripts. According to the structure of *Lactb* gene, exon3-exon5 of *Lactb*-201 (ENSMUST00000034929.7) transcript is recommended as the knockout region. The region contains 712bp coding sequence. Knocking out the region will result in disruption of protein function.

- In this project we use CRISPR-Cas9 technology to modify *Lactb* gene. The brief process is as follows: gRNAs were transcribed in vitro. Cas9 and gRNAs 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 on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.

Gene Information

Lactb lactamase, beta [Mus musculus (house mouse)]

Gene ID: 80907, updated on 24-Apr-2022

Summary

Official Symbol	Lactb provided by MGI
Official Full Name	lactamase, beta provided by MGI
Primary source	MGI:MGI:1933395
See related	Ensembl:ENSMUSG00000032370
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	LACT-1, Lact1, Mrpl56
Expression	Ubiquitous expression in duodenum adult (RPKM 13.5), adrenal adult (RPKM 10.4) and 28 other tissuesSee more
Orthologs	human all

Source: https://www.ncbi.nlm.nih.gov/

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Transcript Information

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

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Lactb-201	ENSMUST00000034929.7	2031	551aa	Protein coding	CCDS40674		TSL:1 , GENCODE basic , APPRIS P1 ,
Lactb-202	ENSMUST00000215172.2	1806	356aa	Protein coding	-		TSL:1 , GENCODE basic ,

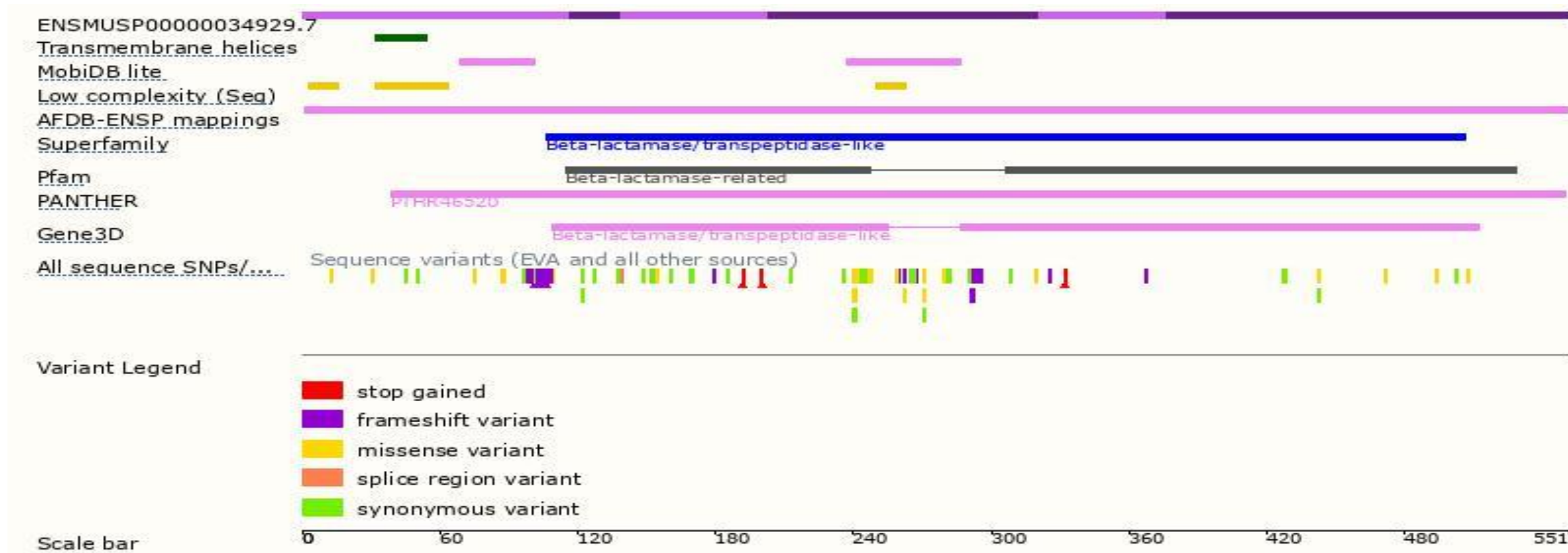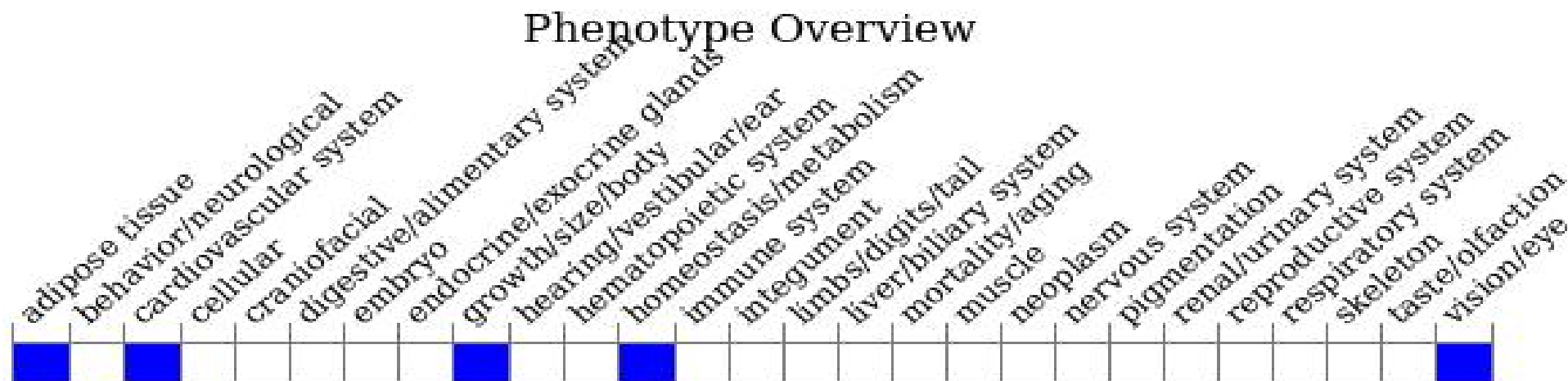The strategy is based on the design of *Lactb*-201 transcript, the transcription is shown below:

< Lactb-201 - ENSMUST00000034929
protein coding

◄ Reverse strand ─────────────────── 20.09 kb ───────────────────

Source: https://www.ensembl.org

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Genomic Information
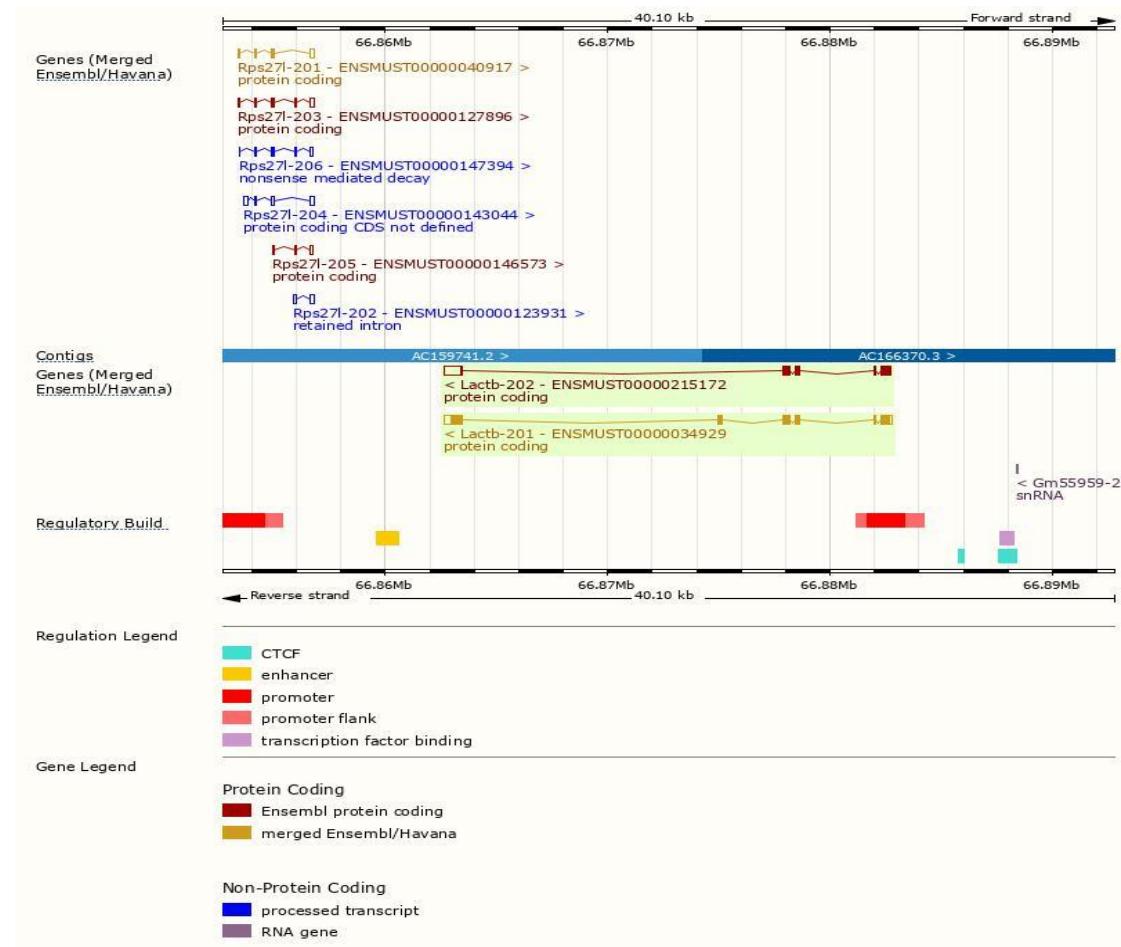
Protein Information

Mouse Phenotype Information (MGI)

Phenotype Overview

Important Information

- *Lactb* is located on Chr9. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is on the same chromosome.

- This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risks of the mutation on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

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