

Lactb Cas9-CKO Strategy

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Overview

Target Gene Name

- Lactb

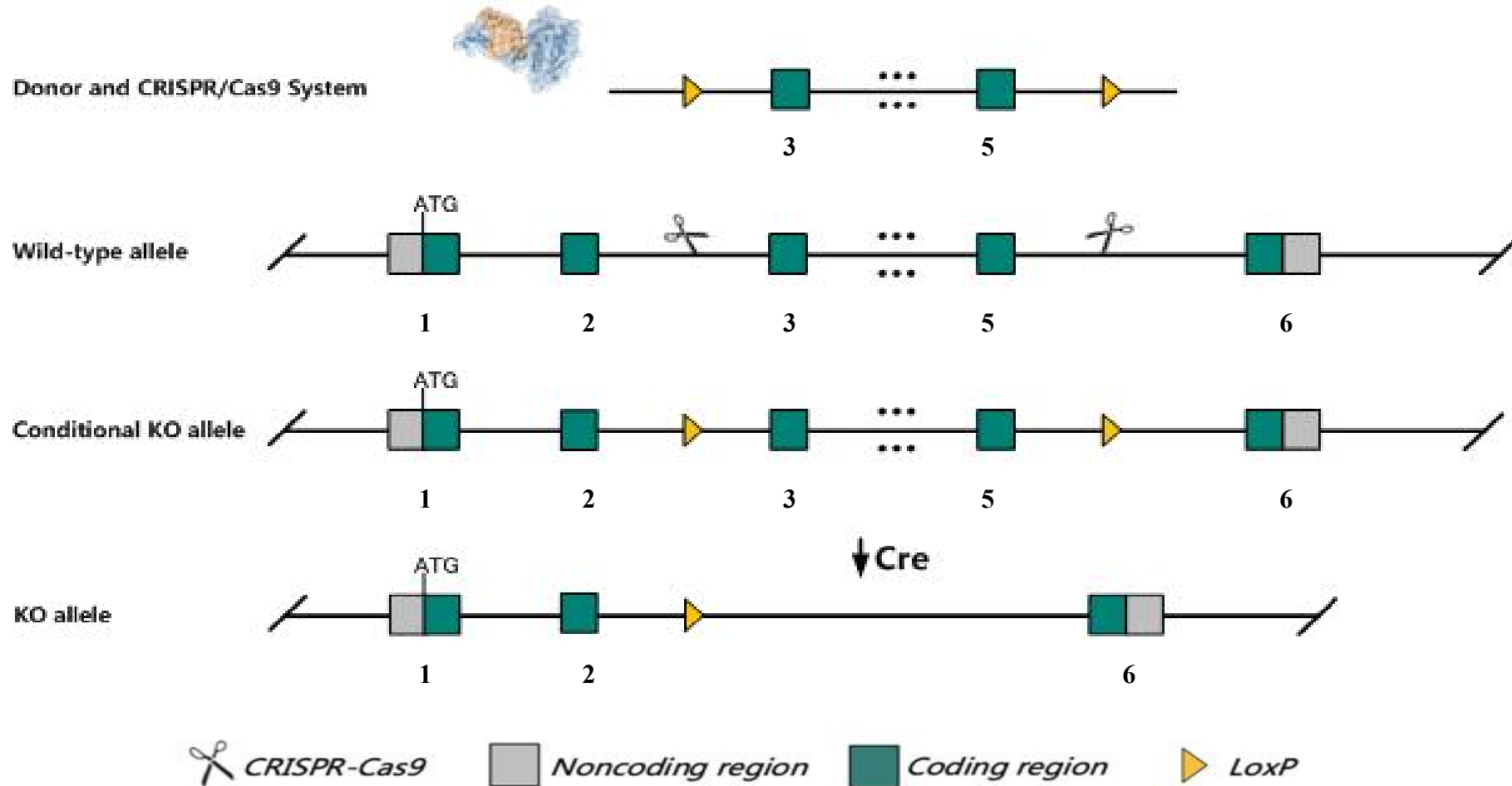
Project Type

- Cas9-CKO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Lactb* gene.

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: 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 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.
- 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.

Gene Information

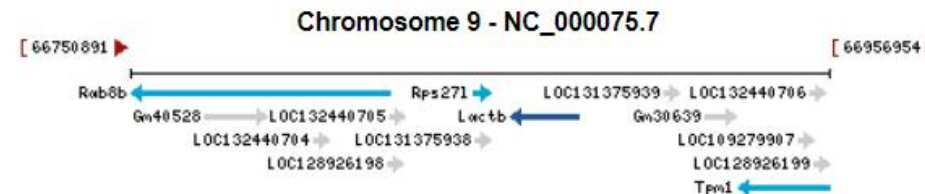
Lactb lactamase, beta [*Mus musculus* (house mouse)]

[Download Datasets](#)

Gene ID: 80907, updated on 5-Mar-2024

Summary

Official Symbol	Lactb provided by MGI
Official Full Name	lactamase, beta provided by MGI
Primary source	MGI:MGI:1933395
See related	Ensembl:ENSMUSG00000032370 AllianceGenome:MGI:1933395
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	Lact1; LACT-1; Mrpl56
Summary	Predicted to enable identical protein binding activity and peptidase activity. Predicted to be involved in proteolysis and regulation of lipid metabolic process. Predicted to act upstream of or within lipid metabolic process. Located in mitochondrion. Is expressed in several structures, including early conceptus; gonad; heart; liver; and metanephros. Orthologous to human LACTB (lactamase beta). [provided by Alliance of Genome Resources, Apr 2022]
Expression	Ubiquitous expression in duodenum adult (RPKM 13.5), adrenal adult (RPKM 10.4) and 28 other tissues See more
Orthologs	human all



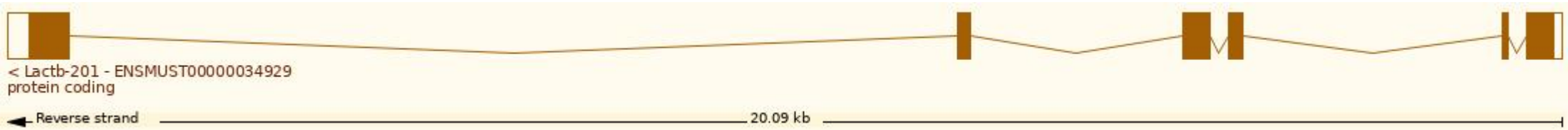
Source: <https://www.ncbi.nlm.nih.gov/>

Transcript Information

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

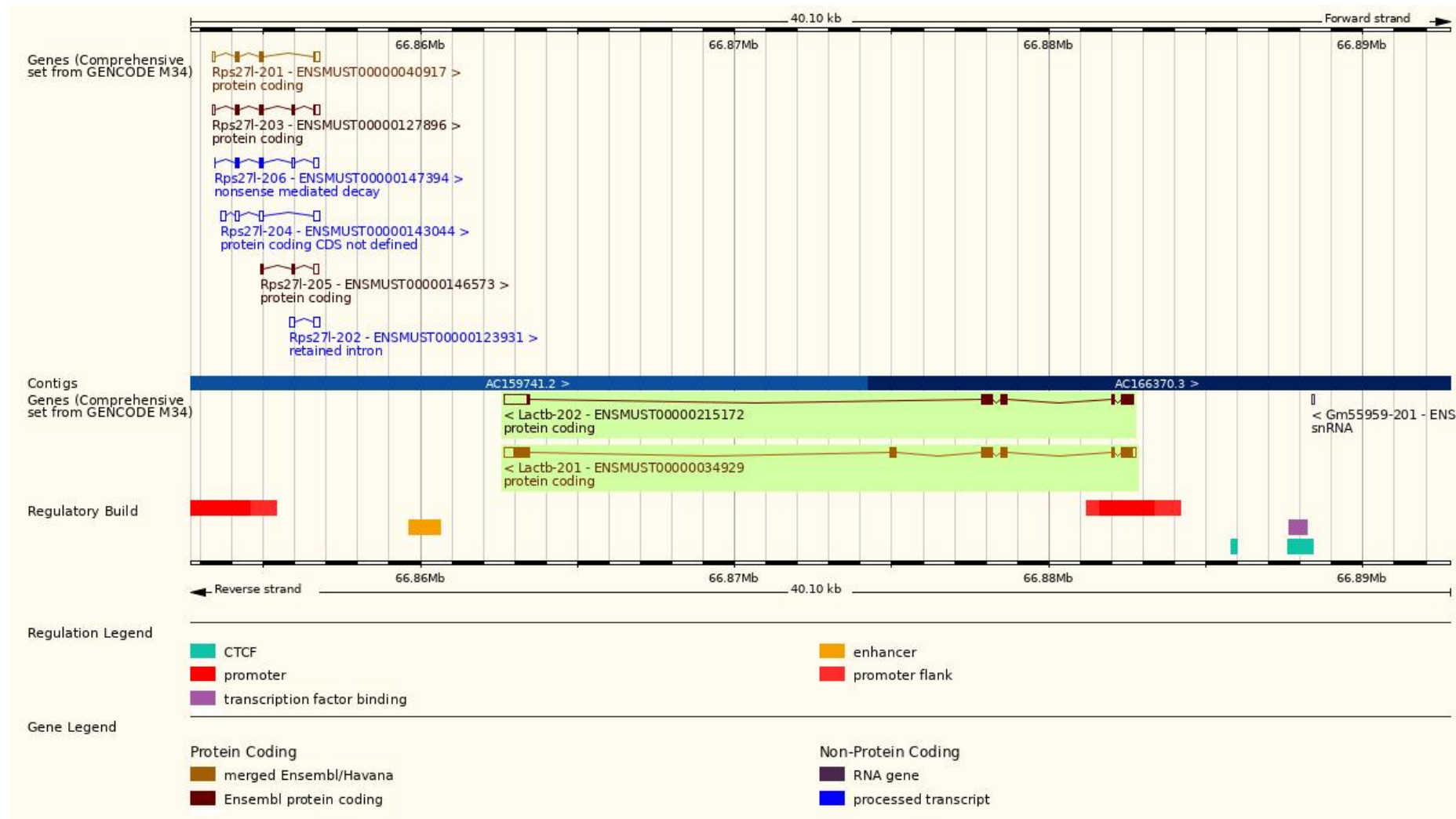
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
ENSMUST00000034929.7	Lactb-201	2031	551aa	Protein coding	CCDS40674	B2RWI2 Q9EP89	Ensembl Canonical GENCODE basic APPRIS P1 TSL:1
ENSMUST00000215172.2	Lactb-202	1806	356aa	Protein coding		A0A1L1SVF9	GENCODE basic TSL:1

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

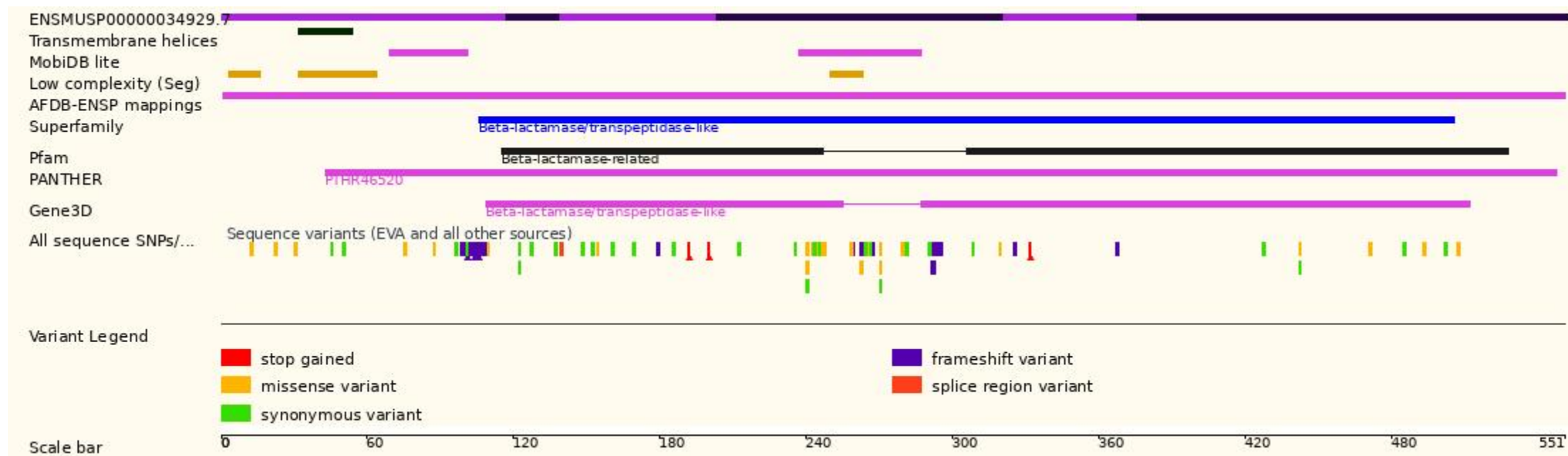


Source: <https://www.ensembl.org>

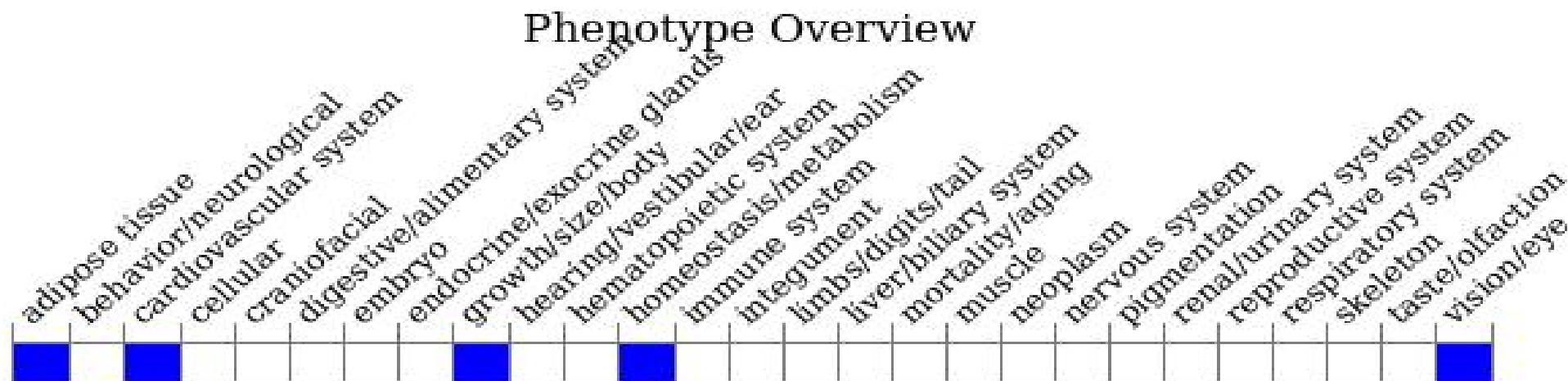
Genomic Information



Protein Information



Mouse Phenotype Information (MGI)



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Important Information

- This strategy does not cause frameshift mutation for *Lactb*-202, and it may leave some protein structures, the retained function is unknown.
- *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 risk of loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.