

Lpar3 Cas9-KO Strategy

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Project Overview

Project Name

Lpar3

Project type

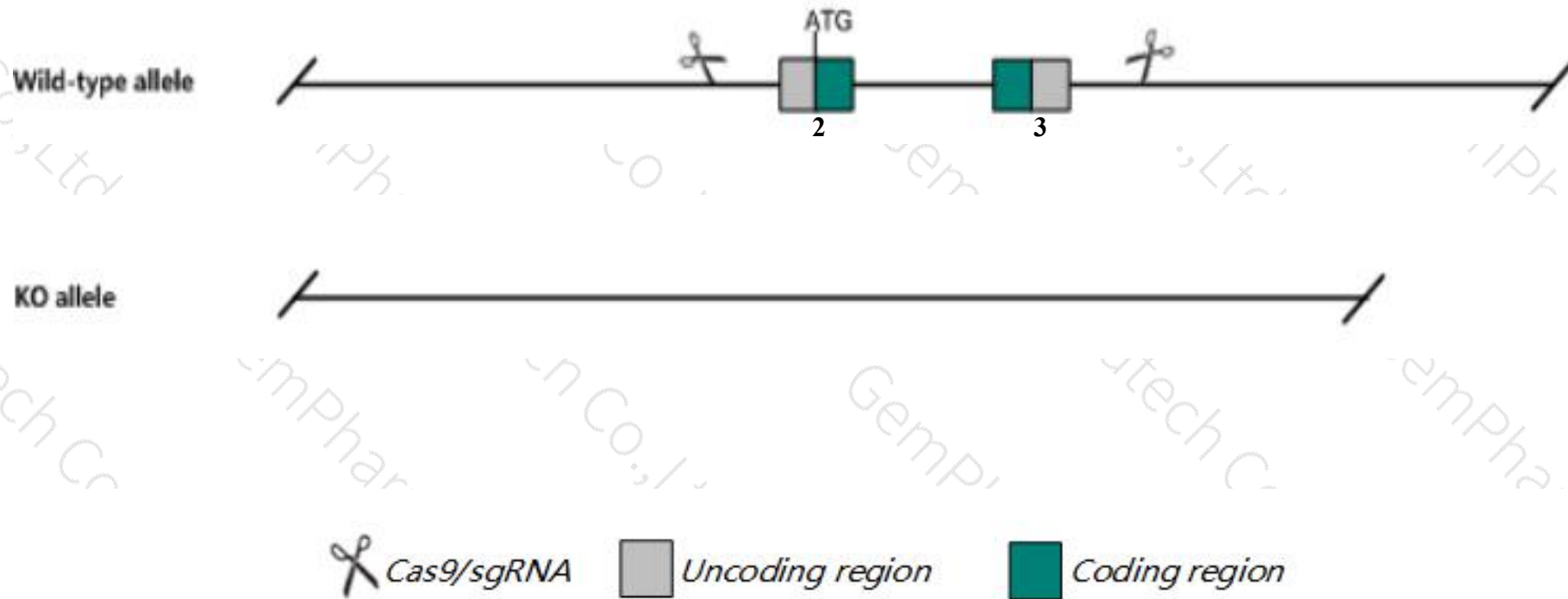
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Lpar3* gene. The schematic diagram is as follows:



- The *Lpar3* gene has 1 transcript. According to the structure of *Lpar3* gene, exon2-exon3 of *Lpar3*-201(ENSMUST00000039164.3) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Lpar3* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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.

- According to the existing MGI data, homozygous null females produce smaller litter sizes and exhibit delayed implantation and altered embryo spacing that leads to delayed development of embryos and hypertrophic placentas that were shared by multiple embryos.
- The *Lpar3* gene is located on the Chr3. 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)

Lpar3 lysophosphatidic acid receptor 3 [Mus musculus (house mouse)]

Gene ID: 65086, updated on 13-Mar-2020

Summary



Official Symbol	Lpar3 provided by MGI
Official Full Name	lysophosphatidic acid receptor 3 provided by MGI
Primary source	MGI:MGI:1929469
See related	Ensembl:ENSMUSG00000036832
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	Edg7, lpA3
Expression	Biased expression in kidney adult (RPKM 14.3), testis adult (RPKM 9.9) and 11 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

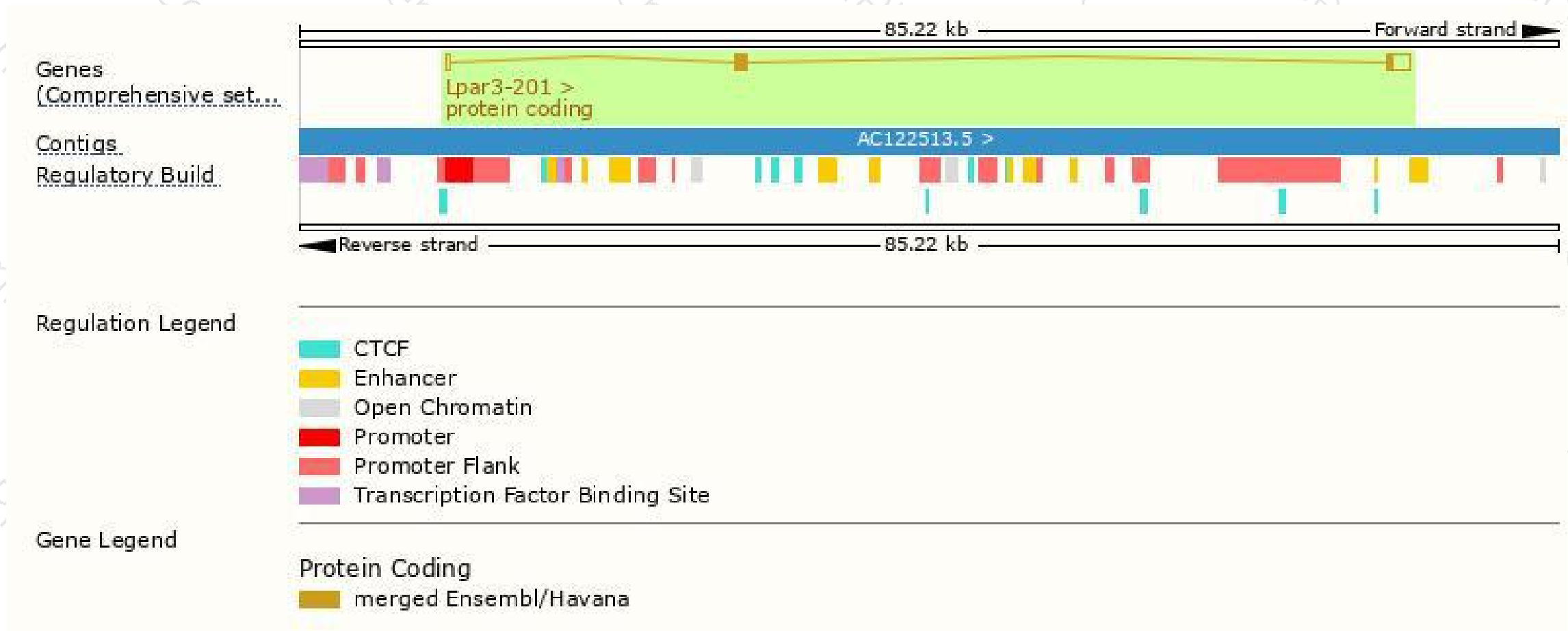
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Lpar3-201	ENSMUST00000039164.3	2464	354aa	Protein coding	CCDS17901	Q544B4 Q9EQ31	TSL:1 GENCODE basic APPRIS P1

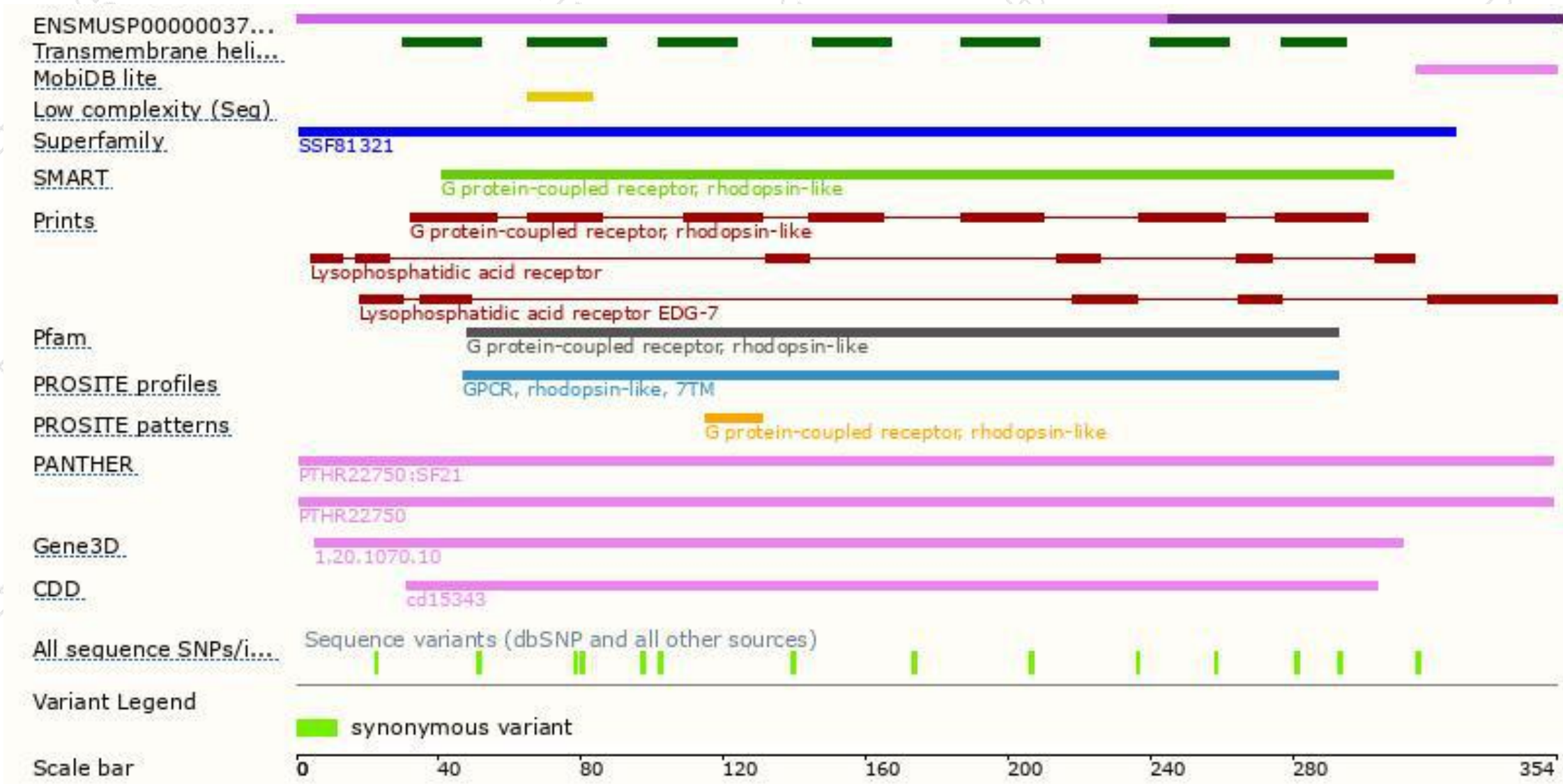
The strategy is based on the design of *Lpar3-201* transcript, the transcription is shown below:



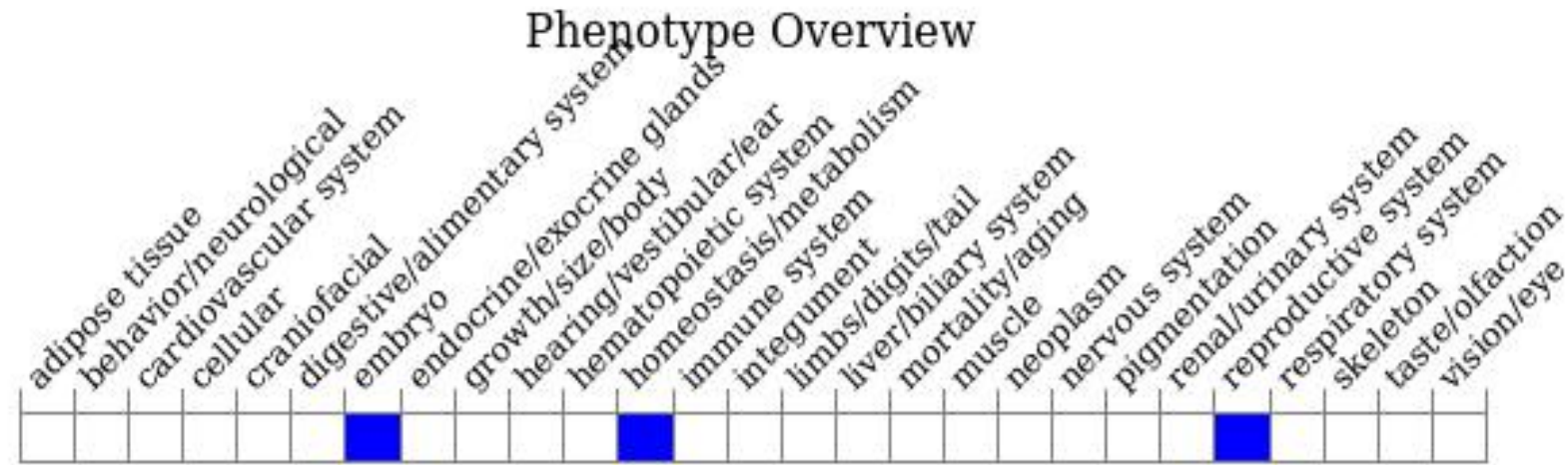
Genomic location distribution



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 females produce smaller litter sizes and exhibit delayed implantation and altered embryo spacing that leads to delayed development of embryos and hypertrophic placentas that were shared by multiple embryos.

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

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