

Pik3r1 Cas9-KO Strategy

Designer:

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Project Overview

Project Name

Pik3r1

Project type

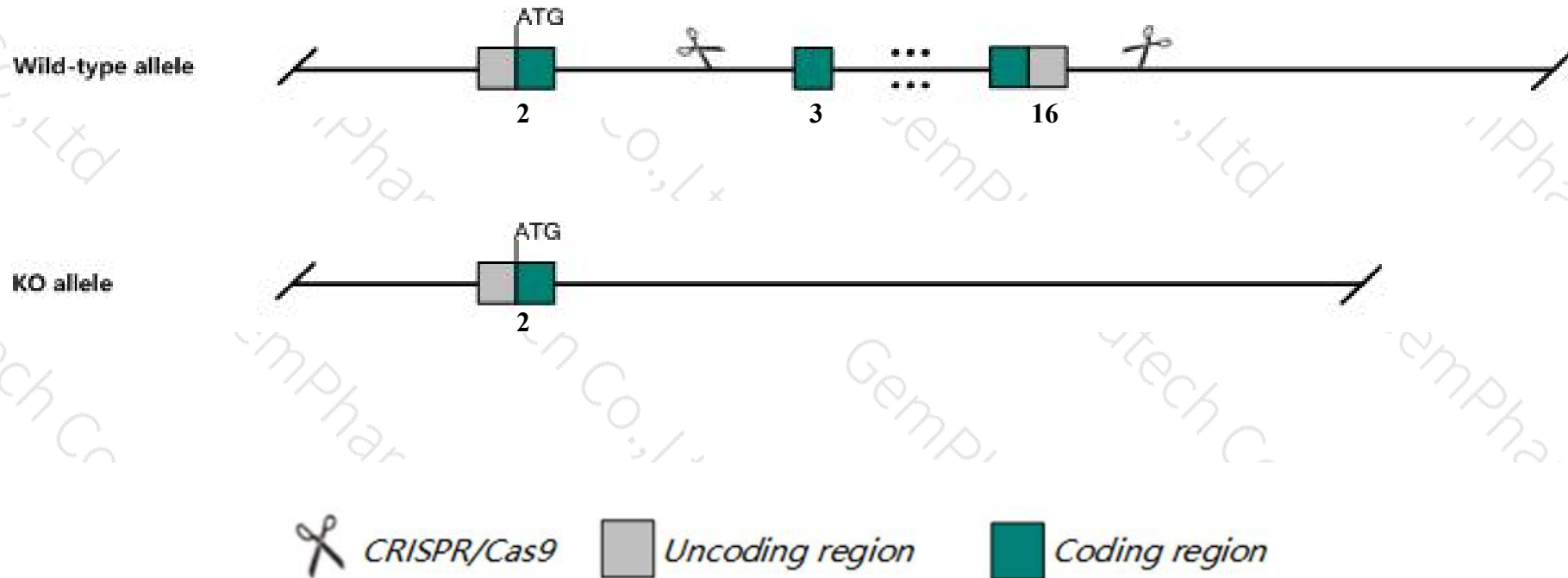
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pik3r1* gene. The schematic diagram is as follows:



- The *Pik3r1* gene has 7 transcripts. According to the structure of *Pik3r1* gene, exon3-exon16 of *Pik3r1*-202 (ENSMUST00000055518.12) transcript is recommended as the knockout region. The region contains 1841bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Pik3r1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygotes for a targeted null mutation exhibit perinatal lethality associated with hepatic necrosis, chylous ascites, enlarged muscle fibers, calcification of cardiac tissue, and hypoglycemia. Mutants lacking only the major isoform are immunodeficient.
- The *Pik3r1* gene is located on the Chr13. 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)

Pik3r1 phosphoinositide-3-kinase regulatory subunit 1 [Mus musculus (house mouse)]

Gene ID: 18708, updated on 7-Apr-2019

Summary



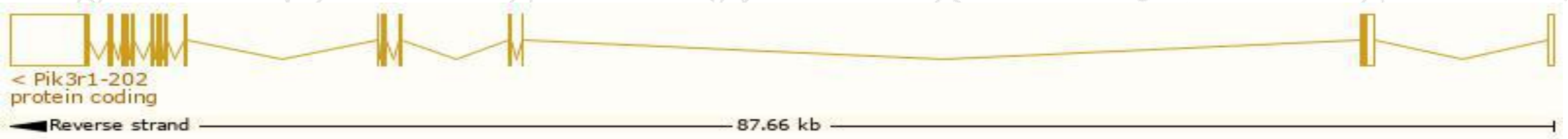
Official Symbol	Pik3r1 provided by MGI
Official Full Name	phosphoinositide-3-kinase regulatory subunit 1 provided by MGI
Primary source	MGI:MGI:97583
See related	Ensembl:ENSMUSG00000041417
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	PI3K, p50alpha, p55alpha, p85alpha
Expression	Ubiquitous expression in subcutaneous fat pad adult (RPKM 14.1), mammary gland adult (RPKM 12.9) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

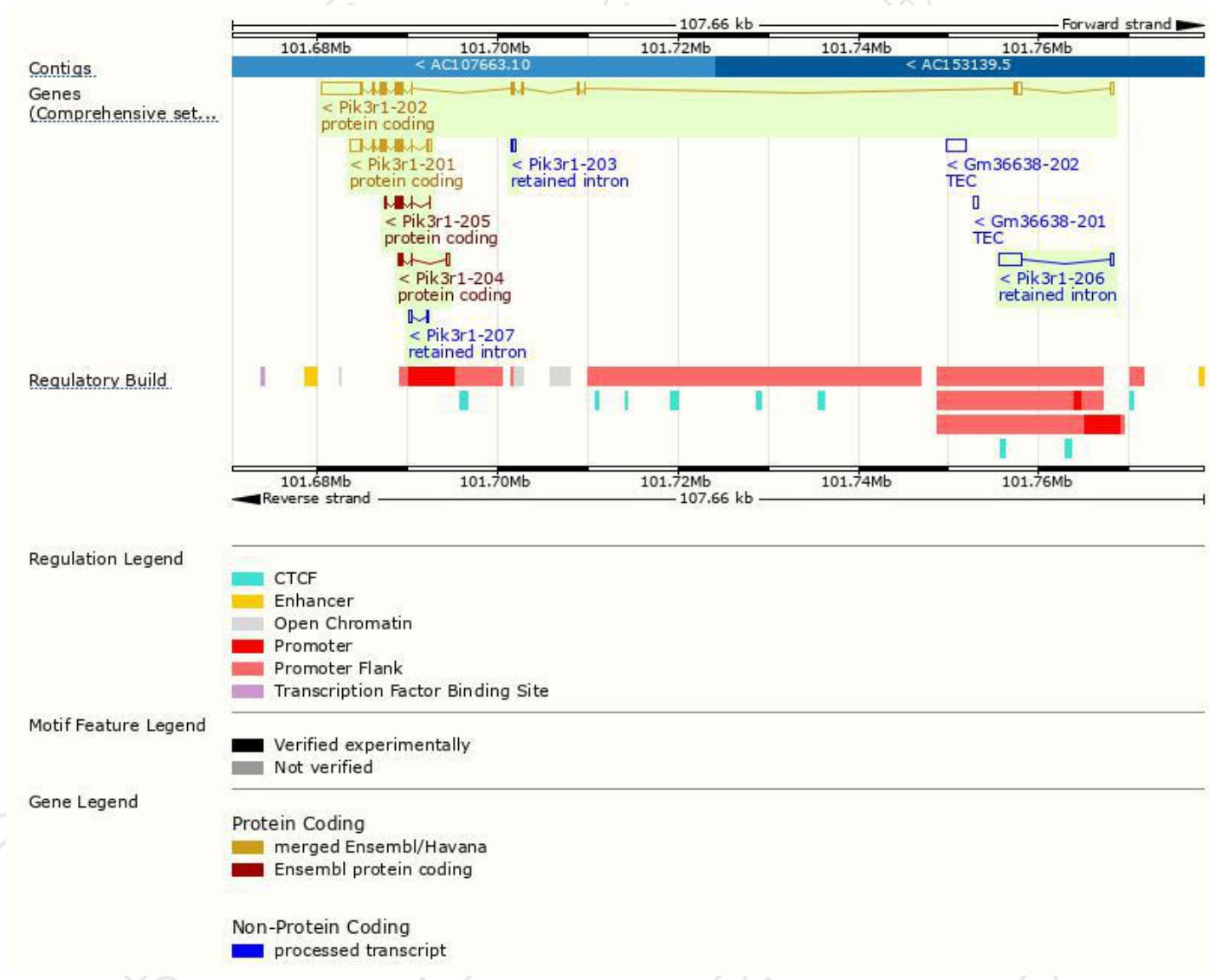
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pik3r1-202	ENSMUST00000055518.12	7113	724aa	Protein coding	CCDS36769	P26450	TSL:1 GENCODE basic APPRIS P1
Pik3r1-201	ENSMUST00000035532.12	2923	454aa	Protein coding	CCDS26740	Q80UI5	TSL:1 GENCODE basic
Pik3r1-205	ENSMUST00000187009.6	701	174aa	Protein coding	-	A0A087WQM2	CDS 3' incomplete TSL:5
Pik3r1-204	ENSMUST00000185795.1	547	112aa	Protein coding	-	P70305	CDS 3' incomplete TSL:1
Pik3r1-206	ENSMUST00000189426.1	2706	No protein	Retained intron	-	-	TSL:1
Pik3r1-207	ENSMUST00000190171.1	610	No protein	Retained intron	-	-	TSL:3
Pik3r1-203	ENSMUST00000185701.1	472	No protein	Retained intron	-	-	TSL:3

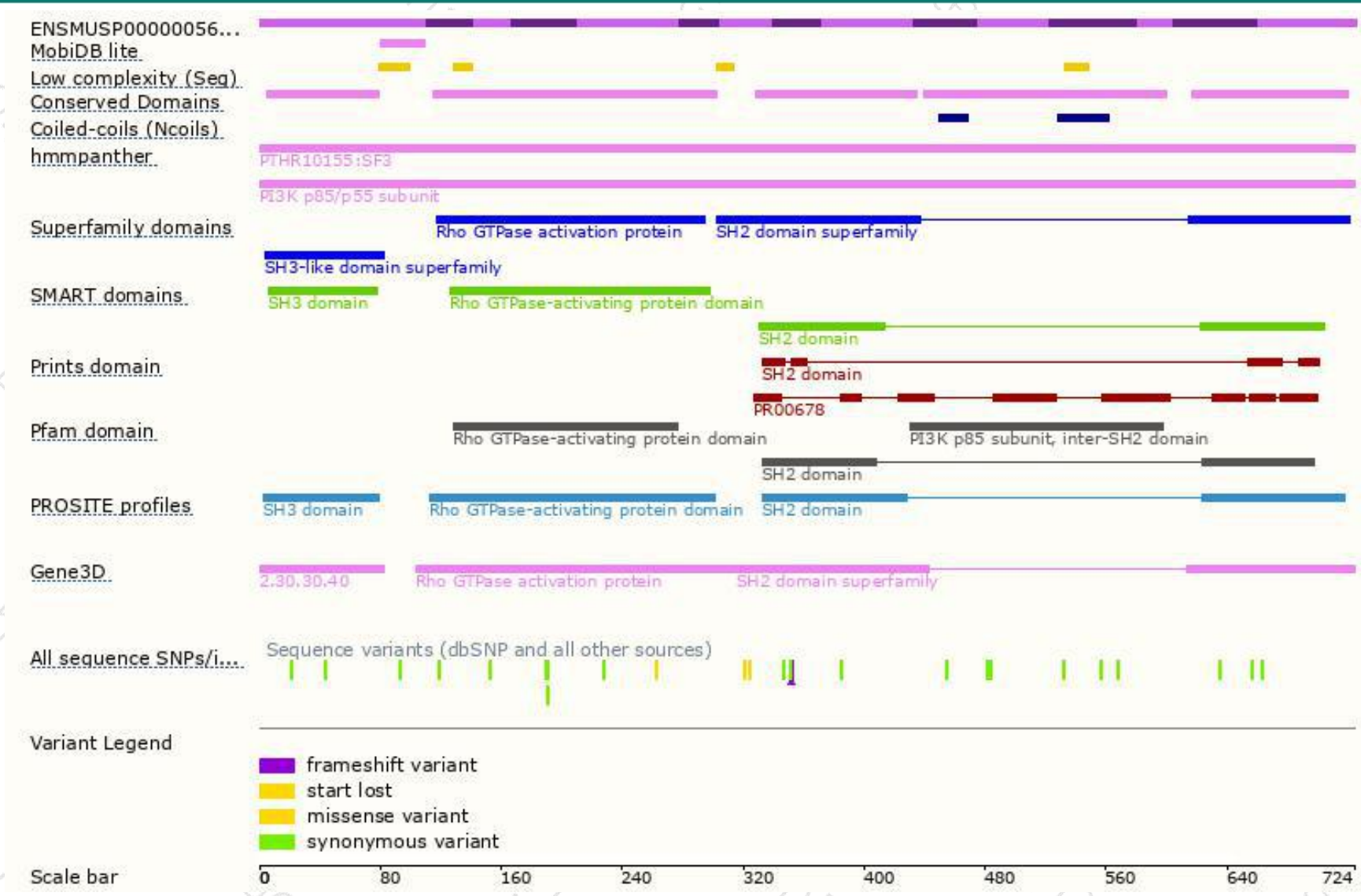
The strategy is based on the design of *Pik3r1-202* transcript,The transcription is shown below



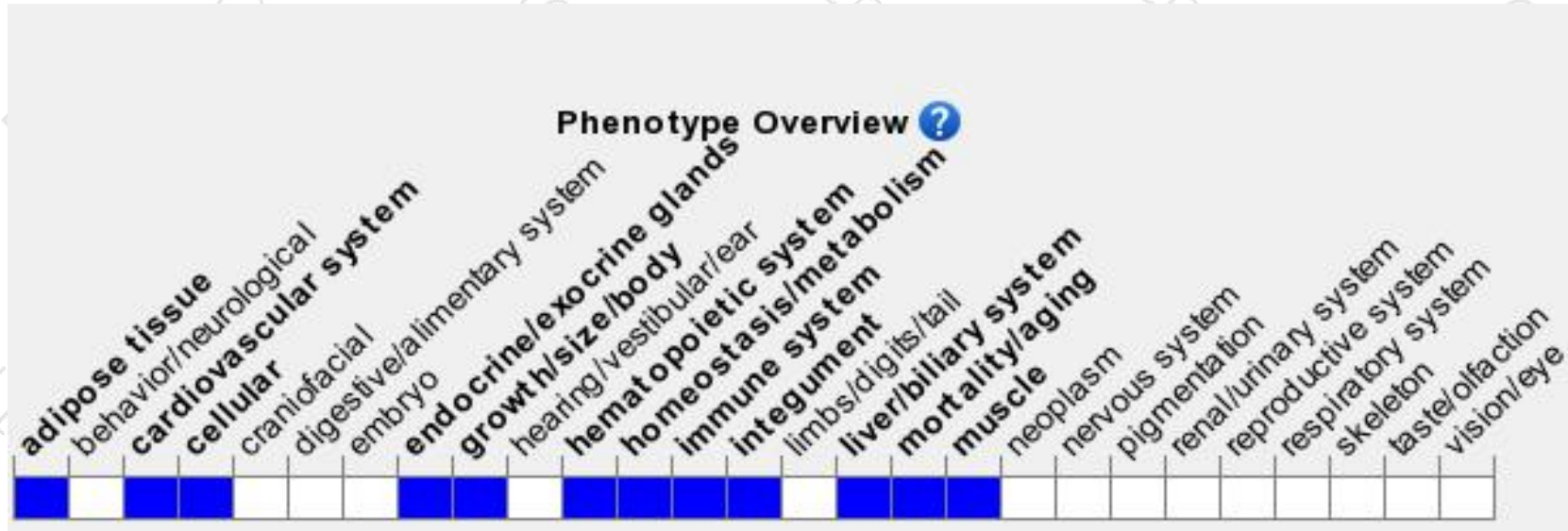
Genomic location distribution



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, Homozygotes for a targeted null mutation exhibit perinatal lethality associated with hepatic necrosis, chylous ascites, enlarged muscle fibers, calcification of cardiac tissue, and hypoglycemia.

Mutants lacking only the major isoform are immunodeficient.

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

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