Plscr3 Cas9-KO Strategy

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Reviewer: Xiaojing Li

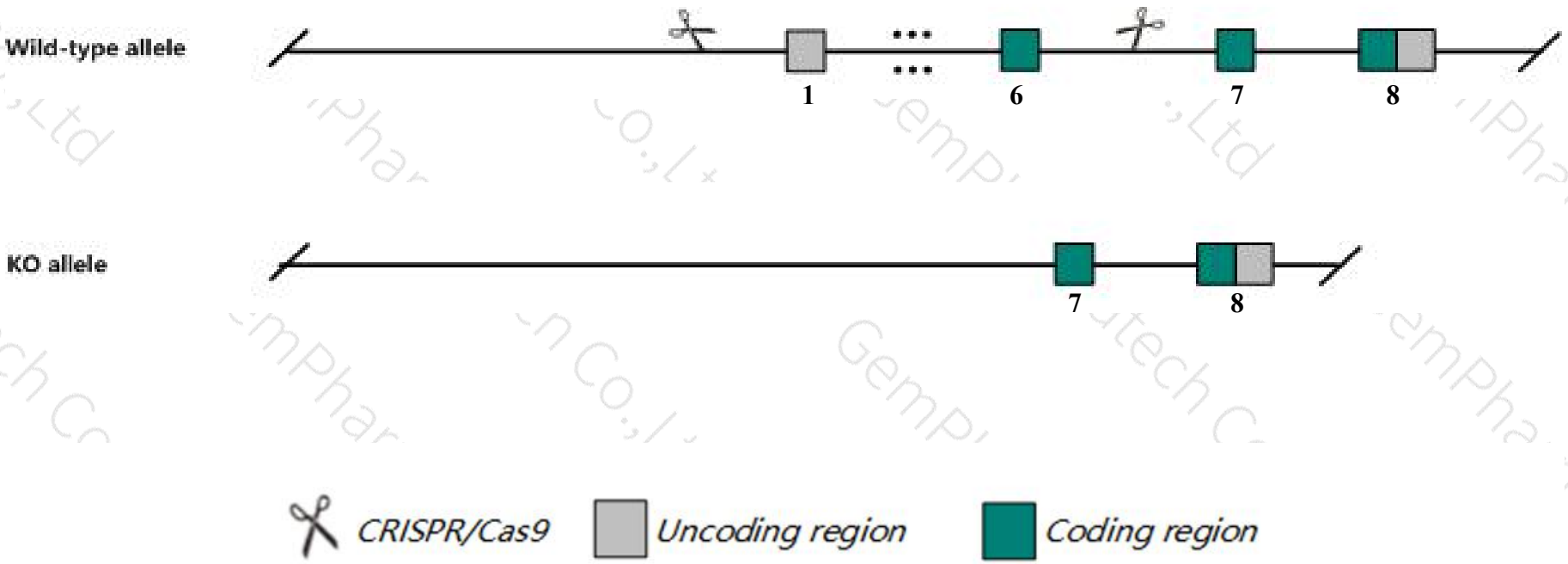
Design Date: 2020-2-26

Project Overview

Project Name	***Plscr3***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Plscr3* gene. The schematic diagram is as follows:



Technical routes

➢ The *Plscr3* gene has 4 transcripts. According to the structure of *Plscr3* gene, exon1-exon6 of *Plscr3-203* (ENSMUST00000108633.8) transcript is recommended as the knockout region.The region contains most 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 *Plscr3* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Homozygous null mice display lipid-engorged adipocytes, increased abdominal fat stores, mild hyperglycemia, dyslipidemia, impaired glucose tolerance, insulin resistance, altered plasma adiponectin and leptin levels, and impaired insulin-stimulated glucose uptake by adipocytes.

- The *Plscr3* gene is located on the Chr11. 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）

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Plscr3 phospholipid scramblase 3 [Mus musculus (house mouse)]

Gene ID: 70310, updated on 31-Jan-2019

Summary

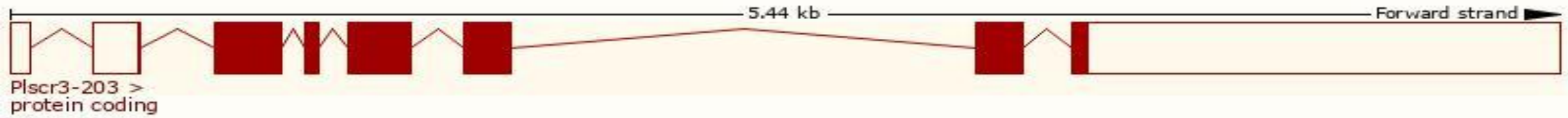
Official Symbol	Plscr3 provided by MGI
Official Full Name	phospholipid scramblase 3 provided by MGI
Primary source	MGI:MGI:1917560
See related	Ensembl:ENSMUSG00000019461
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2210403O21Rik, 2610037N06Rik, ESTM3, X83310
Expression	Ubiquitous expression in lung adult (RPKM 35.8), limb E14.5 (RPKM 32.0) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

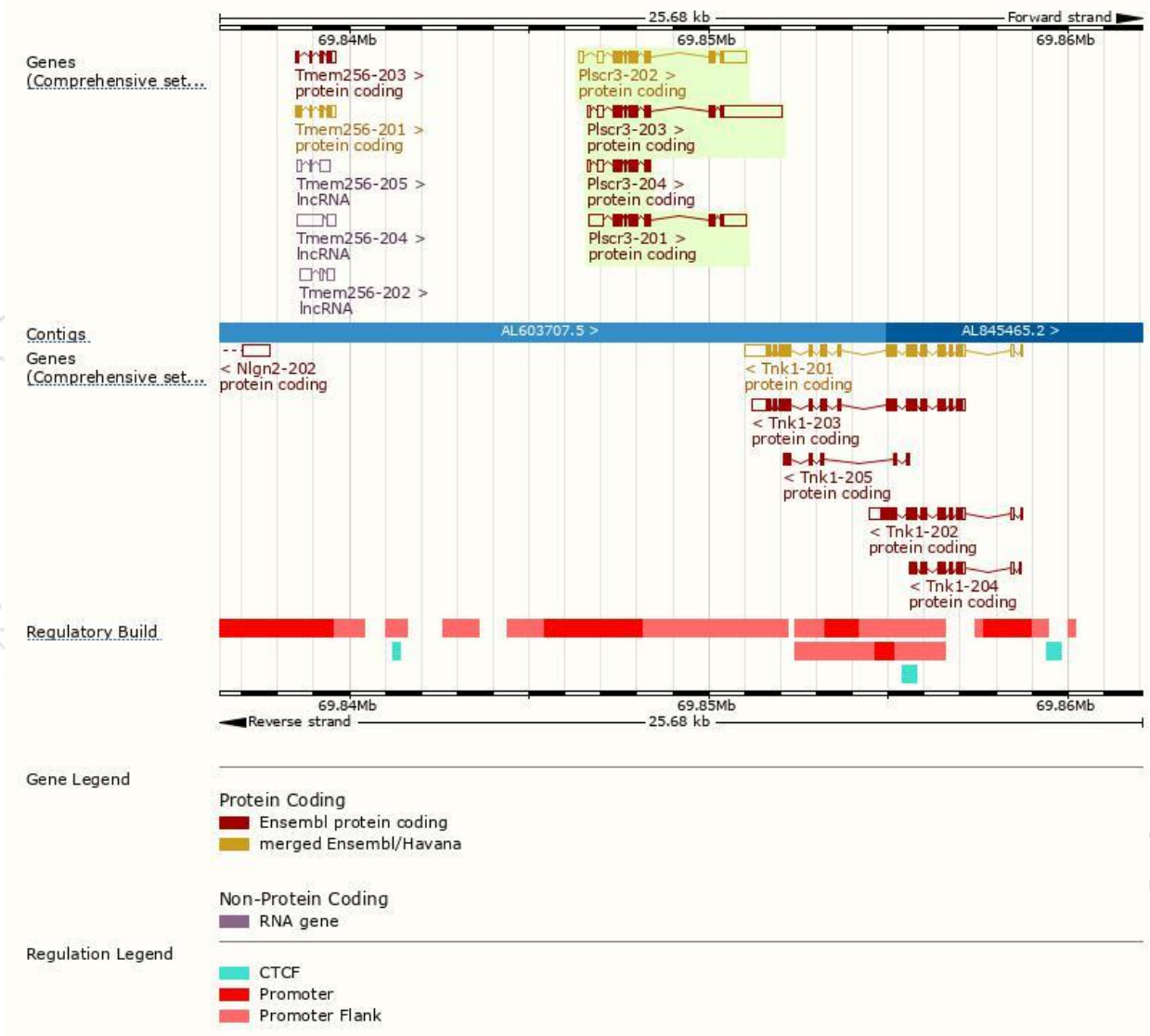
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Plscr3-203	ENSMUST00000108633.8	2785	296aa	Protein coding	CCDS24916	Q5F283 Q9JIZ9	TSL:1 GENCODE basic APPRIS P1
Plscr3-201	ENSMUST00000019605.3	1927	296aa	Protein coding	CCDS24916	Q5F283 Q9JIZ9	TSL:1 GENCODE basic APPRIS P1
Plscr3-202	ENSMUST00000108632.7	1835	296aa	Protein coding	CCDS24916	Q5F283 Q9JIZ9	TSL:1 GENCODE basic APPRIS P1
Plscr3-204	ENSMUST00000152566.7	908	224aa	Protein coding	-	Q5F284	CDS 3' incomplete TSL:3

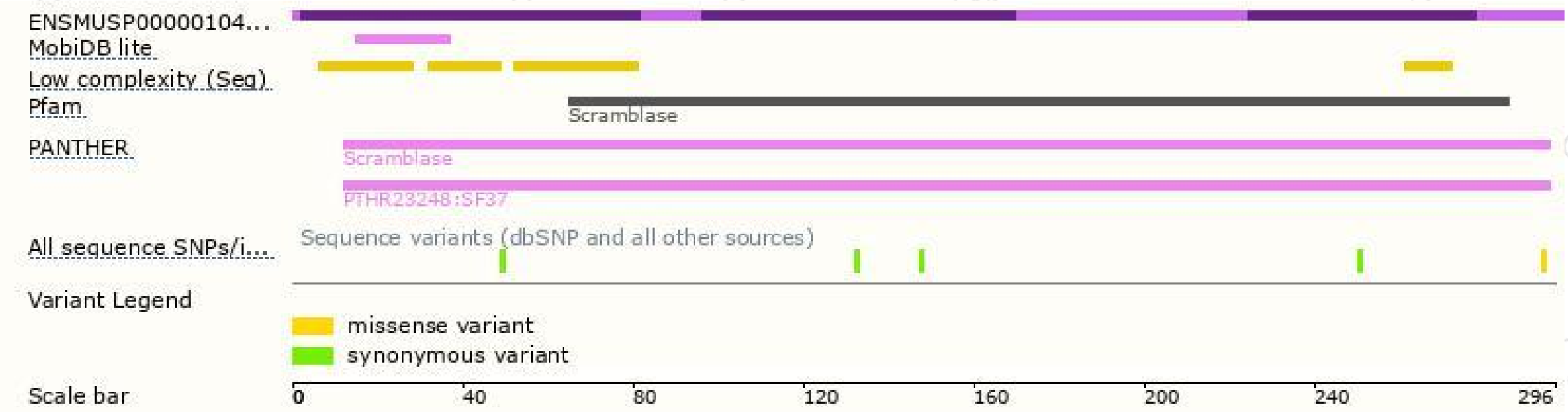
The strategy is based on the design of *Plscr3-203* transcript,The transcription is shown below



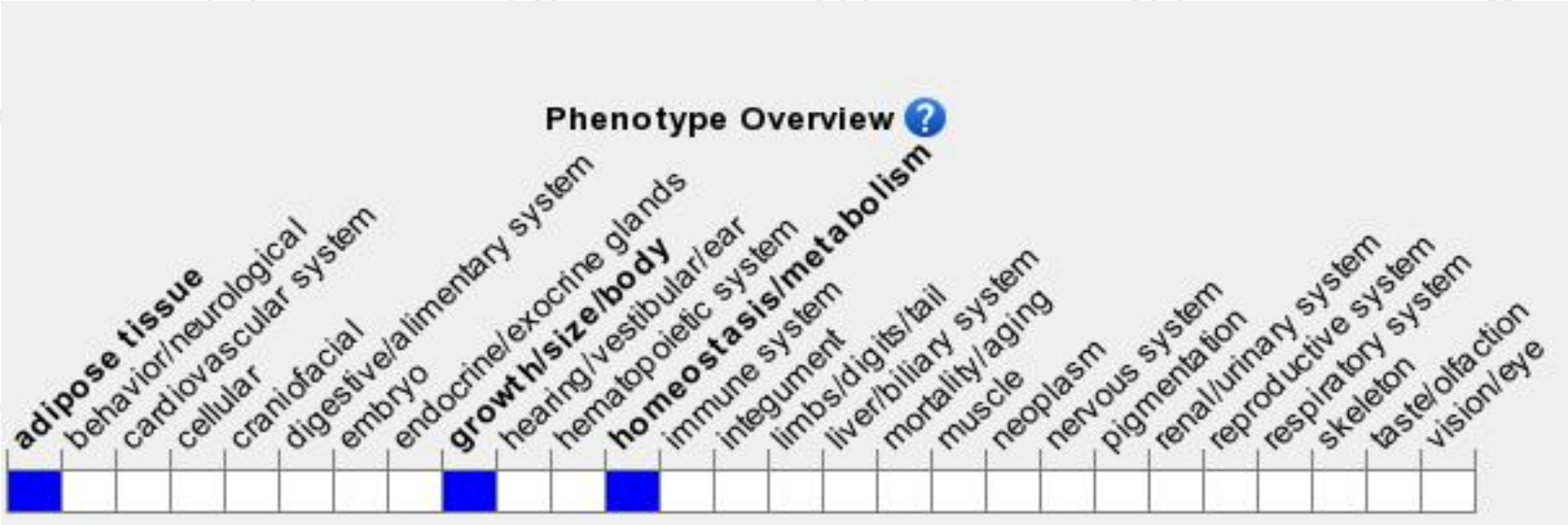
Genomic location distribution



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/).

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

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