

Phactr3 Cas9-CKO Strategy

Designer: Longyun Hu

Reviewer: Rui Xiong

Design Date: 2021-3-12

Project Overview

Project Name

Phactr3

Project type

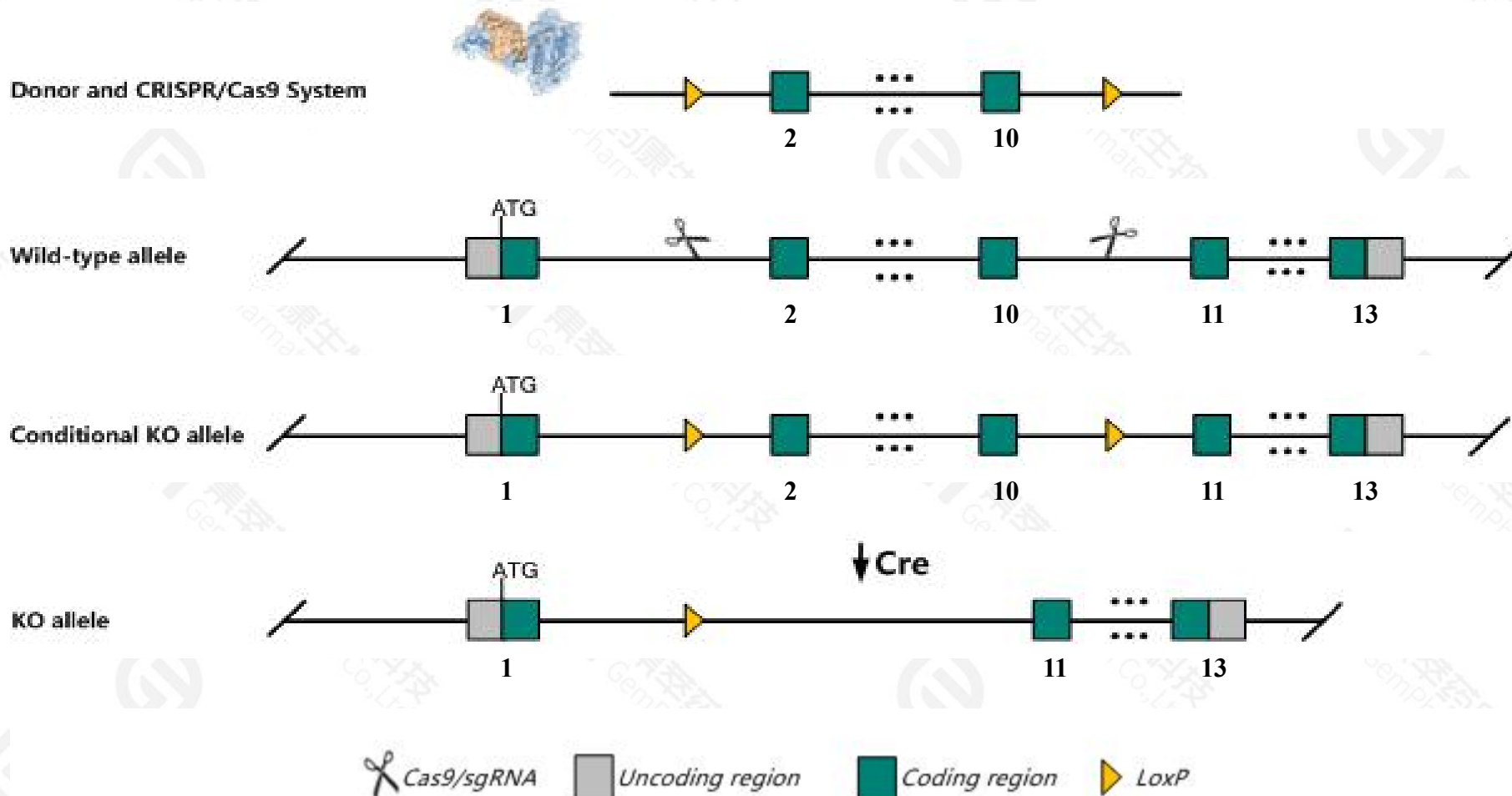
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Phactr3* gene. The schematic diagram is as follows:



- The *Phactr3* gene has 7 transcripts. According to the structure of *Phactr3* gene, exon2-exon10 of *Phactr3*-203(ENSMUST00000108915.7) transcript is recommended as the knockout region. The region contains 1328bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Phactr3* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6JGpt mice.
- The flox mice was 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.

- The *Phactr3* gene is located on the Chr2. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Phactr3 phosphatase and actin regulator 3 [Mus musculus (house mouse)]

Gene ID: 74189, updated on 13-Mar-2020

Summary



Official Symbol Phactr3 provided by [MGI](#)

Official Full Name phosphatase and actin regulator 3 provided by [MGI](#)

Primary source [MGI:MGI:1921439](#)

See related [Ensembl:ENSMUSG00000027525](#)

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 1500003N10Rik, 4930415A02Rik, H17739, Scapin1, Scapinin, mKIAA4224, s

Expression Biased expression in frontal lobe adult (RPKM 15.2), cortex adult (RPKM 14.8) and 5 other tissues [See more](#)

Orthologs [human](#) [all](#)

Transcript information (Ensembl)

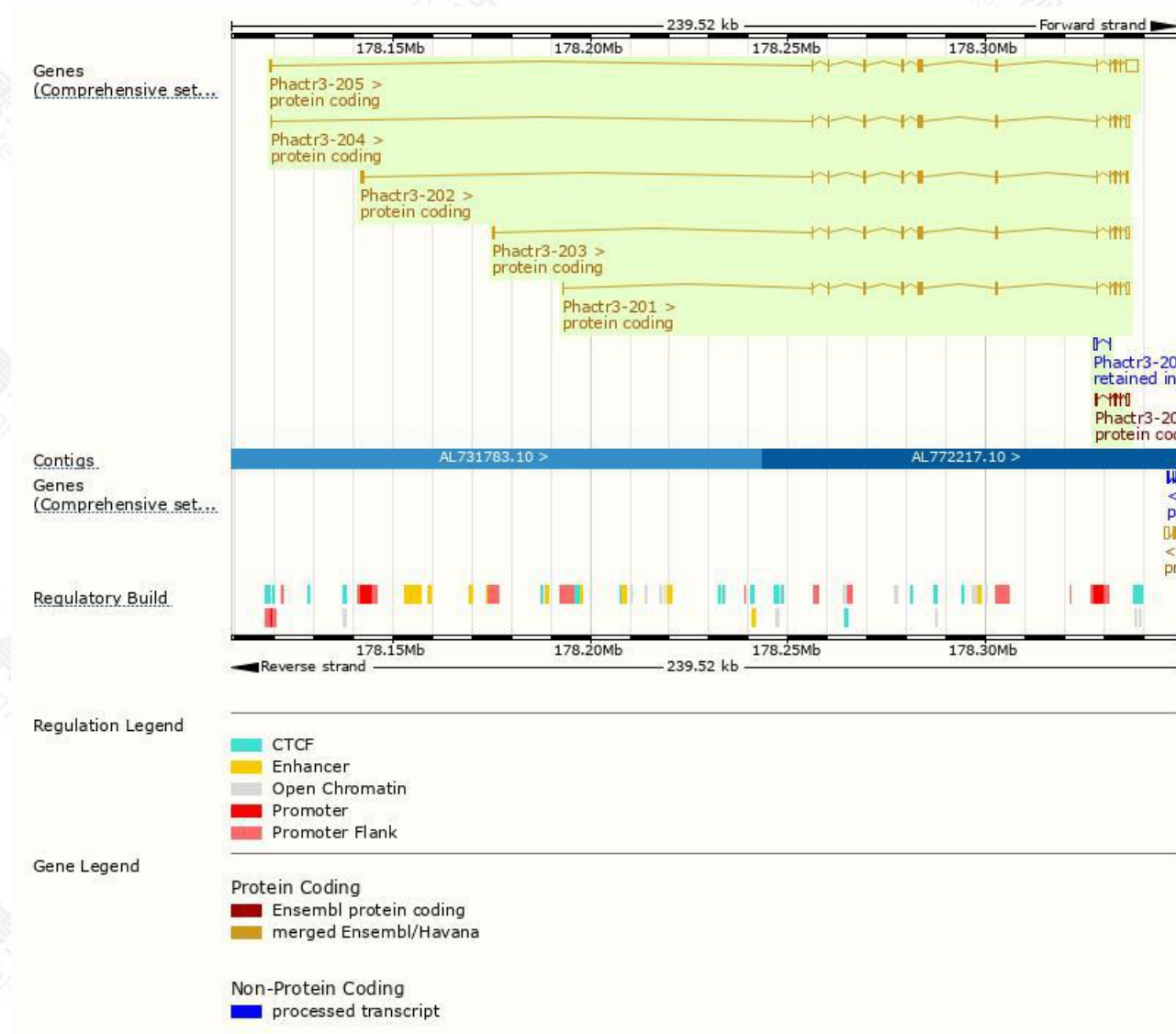
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Phactr3-205	ENSMUST00000108917.7	4858	553aa	Protein coding	CCDS50838	A2AHM4	TSL:1 GENCODE basic
Phactr3-203	ENSMUST00000108915.7	2694	559aa	Protein coding	CCDS50839	Q8BYK5	TSL:1 GENCODE basic
Phactr3-202	ENSMUST00000103066.9	2680	558aa	Protein coding	CCDS17158	Q8BYK5	TSL:1 GENCODE basic APPRIS P4
Phactr3-204	ENSMUST00000108916.7	2656	554aa	Protein coding	CCDS50837	Q8BYK5	TSL:1 GENCODE basic
Phactr3-201	ENSMUST00000103065.1	2642	518aa	Protein coding	CCDS17159	Q6KCA9 Q8BYK5	TSL:1 GENCODE basic APPRIS ALT1
Phactr3-206	ENSMUST00000133267.2	1668	128aa	Protein coding	-	-	TSL:5 GENCODE basic
Phactr3-207	ENSMUST00000141272.1	825	No protein	Retained intron	-	-	TSL:1

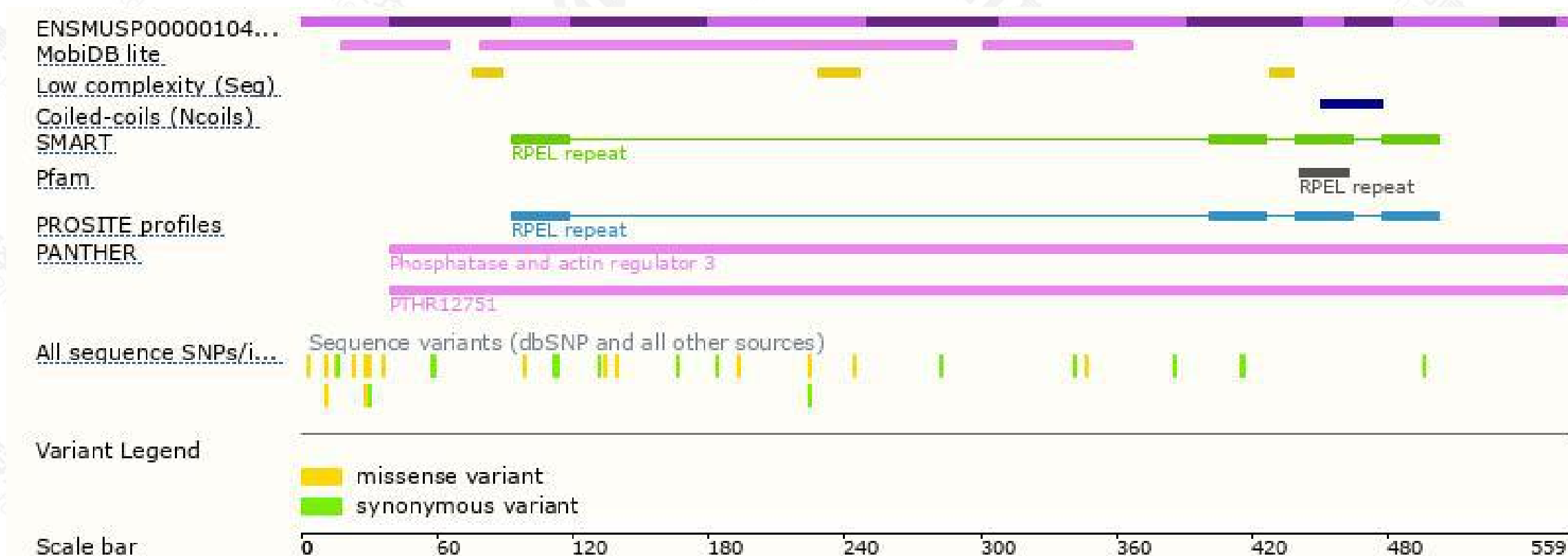
The strategy is based on the design of *Phactr3-203* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

Tel: 025-5864 1534

