

Phactr1 Cas9-KO Strategy

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Project Overview

Project Name

Phactr1

Project type

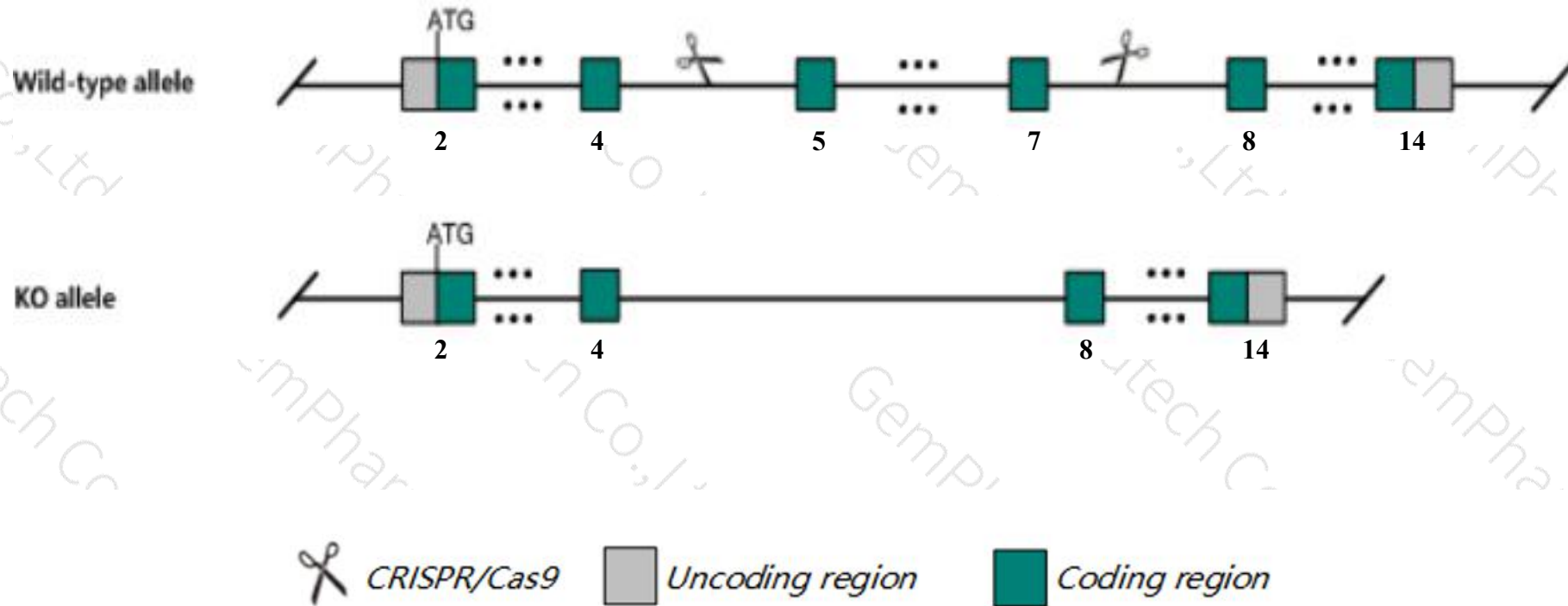
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Phactr1* gene. The schematic diagram is as follows:



- The *Phactr1* gene has 17 transcripts. According to the structure of *Phactr1* gene, exon5-exon7 of *Phactr1*-205 (ENSMUST00000128646.7) transcript is recommended as the knockout region. The region contains 571bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Phactr1* gene. The brief process is as follows: CRISPR/Cas9 system

- The *Phactr1* 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)

Phactr1 phosphatase and actin regulator 1 [*Mus musculus* (house mouse)]

Gene ID: 218194, updated on 13-Mar-2020

Summary

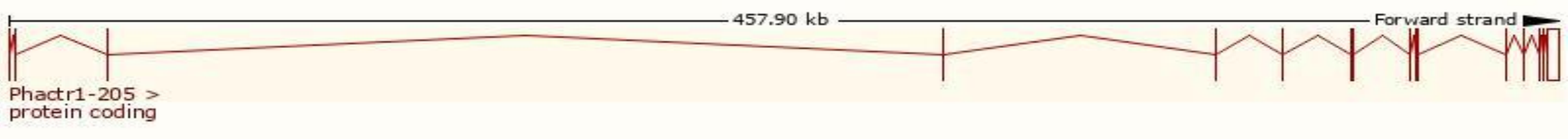
Official Symbol	Phactr1 provided by MGI
Official Full Name	phosphatase and actin regulator 1 provided by MGI
Primary source	MGI:MGI:2659021
See related	Ensembl:ENSMUSG00000054728
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Rpel1; 9630030F18Rik
Expression	Biased expression in cortex adult (RPKM 18.5), frontal lobe adult (RPKM 16.3) and 9 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

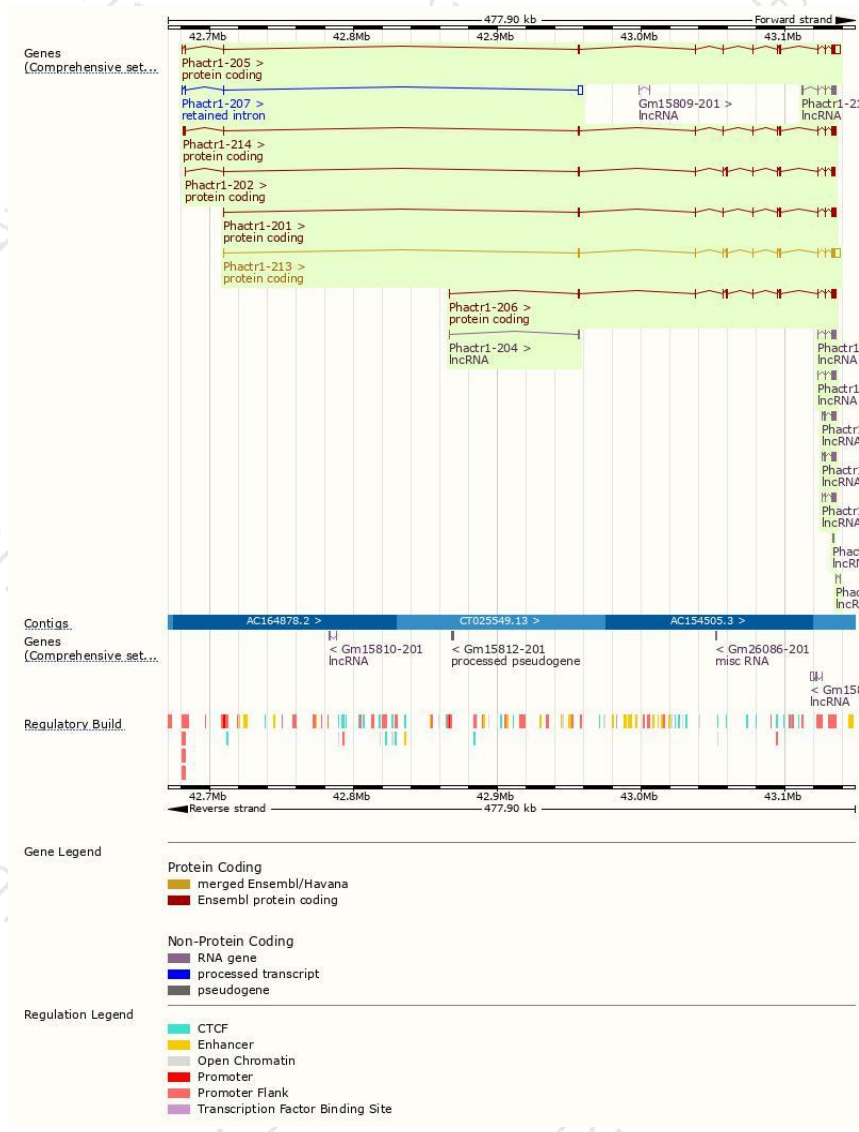
The gene has 17 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Phactr1-205	ENSMUST00000128646.7	5430	580aa	Protein coding	CCDS79181	Q2M3X8	TSL:1 GENCODE basic APPRIS P4
Phactr1-213	ENSMUST00000148891.7	5307	642aa	Protein coding	CCDS49251	Q2M3X8	TSL:1 GENCODE basic
Phactr1-214	ENSMUST00000149235.7	2076	580aa	Protein coding	CCDS79181	Q2M3X8	TSL:5 GENCODE basic APPRIS P4
Phactr1-206	ENSMUST00000131942.1	2056	557aa	Protein coding	CCDS79182	B1B1B8	TSL:1 GENCODE basic APPRIS ALT1
Phactr1-201	ENSMUST00000066928.11	2013	573aa	Protein coding	-	Q2M3X8	TSL:1 GENCODE basic
Phactr1-202	ENSMUST00000110161.9	1950	649aa	Protein coding	-	Q2M3X8	TSL:5 GENCODE basic APPRIS ALT2
Phactr1-208	ENSMUST00000136576.7	716	128aa	Protein coding	-	-	TSL:1 GENCODE basic
Phactr1-217	ENSMUST00000239286.1	707	205aa	Protein coding	-	-	CDS 3' incomplete
Phactr1-211	ENSMUST00000138640.7	870	124aa	Nonsense mediated decay	-	-	TSL:5
Phactr1-210	ENSMUST00000137434.7	689	No protein	Processed transcript	-	-	TSL:3
Phactr1-215	ENSMUST00000150620.7	616	No protein	Processed transcript	-	-	TSL:1
Phactr1-203	ENSMUST00000123987.1	590	No protein	Processed transcript	-	-	TSL:3
Phactr1-212	ENSMUST00000140651.7	586	No protein	Processed transcript	-	-	TSL:3
Phactr1-209	ENSMUST00000136951.1	380	No protein	Processed transcript	-	-	TSL:3
Phactr1-216	ENSMUST00000161201.1	273	No protein	Processed transcript	-	-	TSL:3
Phactr1-204	ENSMUST00000127859.1	181	No protein	Processed transcript	-	-	TSL:5
Phactr1-207	ENSMUST00000132050.1	2711	No protein	Retained intron	-	-	TSL:1

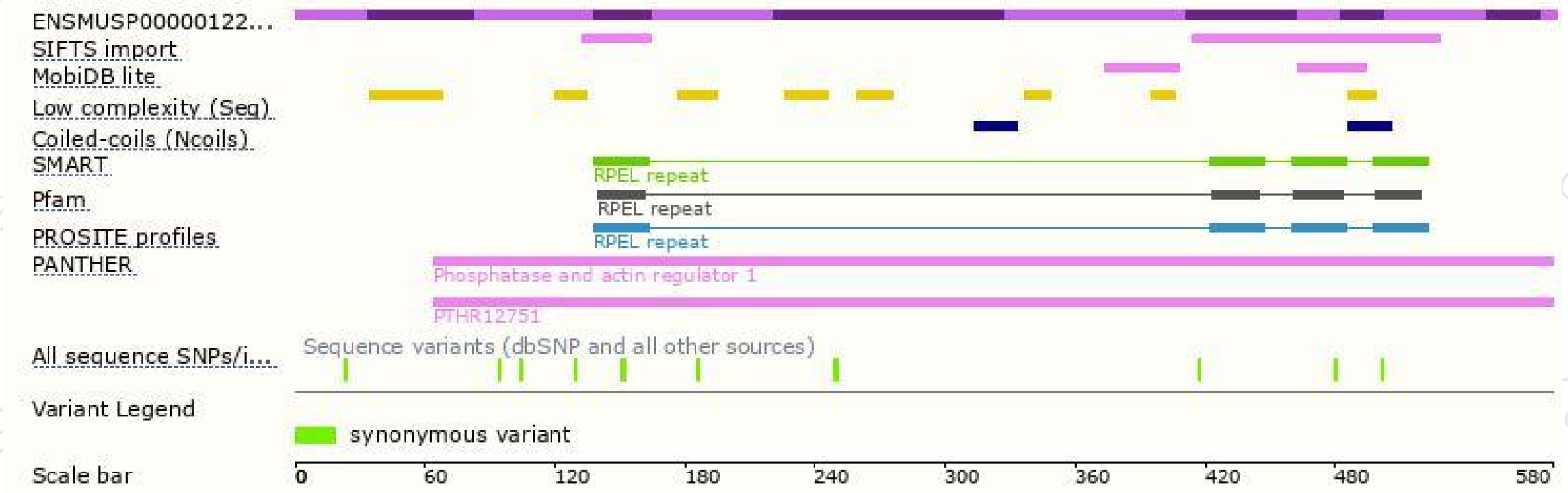
The strategy is based on the design of *Phactr1-205* transcript,The transcription is shown below



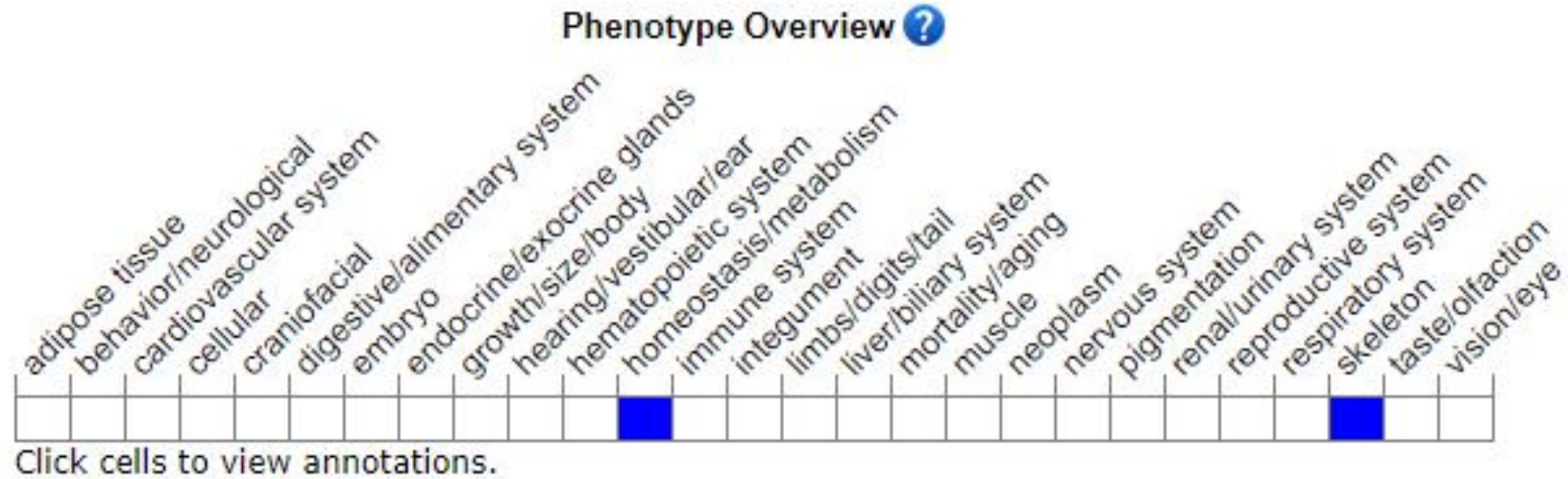
Genomic location distribution



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/>).

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

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