

Ppp2r5a Cas9-KO Strategy

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Reviewer:

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Project Overview

Project Name

Ppp2r5a

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ppp2r5a* gene. The schematic diagram is as follows:



- The *Ppp2r5a* gene has 8 transcripts. According to the structure of *Ppp2r5a* gene, exon2-exon3 of *Ppp2r5a-201* (ENSMUST00000067976.8) transcript is recommended as the knockout region. The region contains 299bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ppp2r5a* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a gene trap allele are hypomorphic, with the severely reduced expression causing development of spontaneous skin lesions combined with hair loss and enlarged liver, spleen and lymph nodes. They are also more susceptible to chemically induced skin tumors.
- The *Ppp2r5a* gene is located on the Chr1. 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)

Ppp2r5a protein phosphatase 2, regulatory subunit B', alpha [*Mus musculus* (house mouse)]

Gene ID: 226849, updated on 12-Aug-2019

Summary

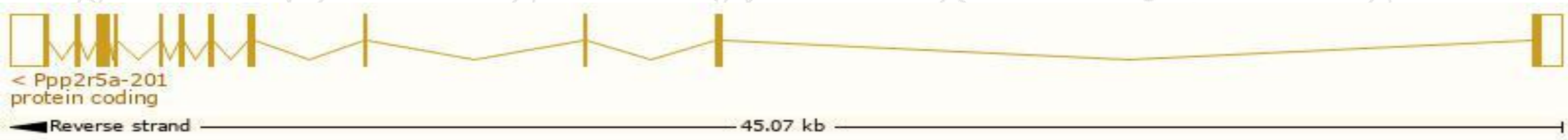
Official Symbol	Ppp2r5a provided by MGI
Official Full Name	protein phosphatase 2, regulatory subunit B', alpha provided by MGI
Primary source	MGI:MGI:2388479
See related	Ensembl:ENSMUSG00000026626
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	PR61alpha
Expression	Ubiquitous expression in mammary gland adult (RPKM 92.3), subcutaneous fat pad adult (RPKM 91.4) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

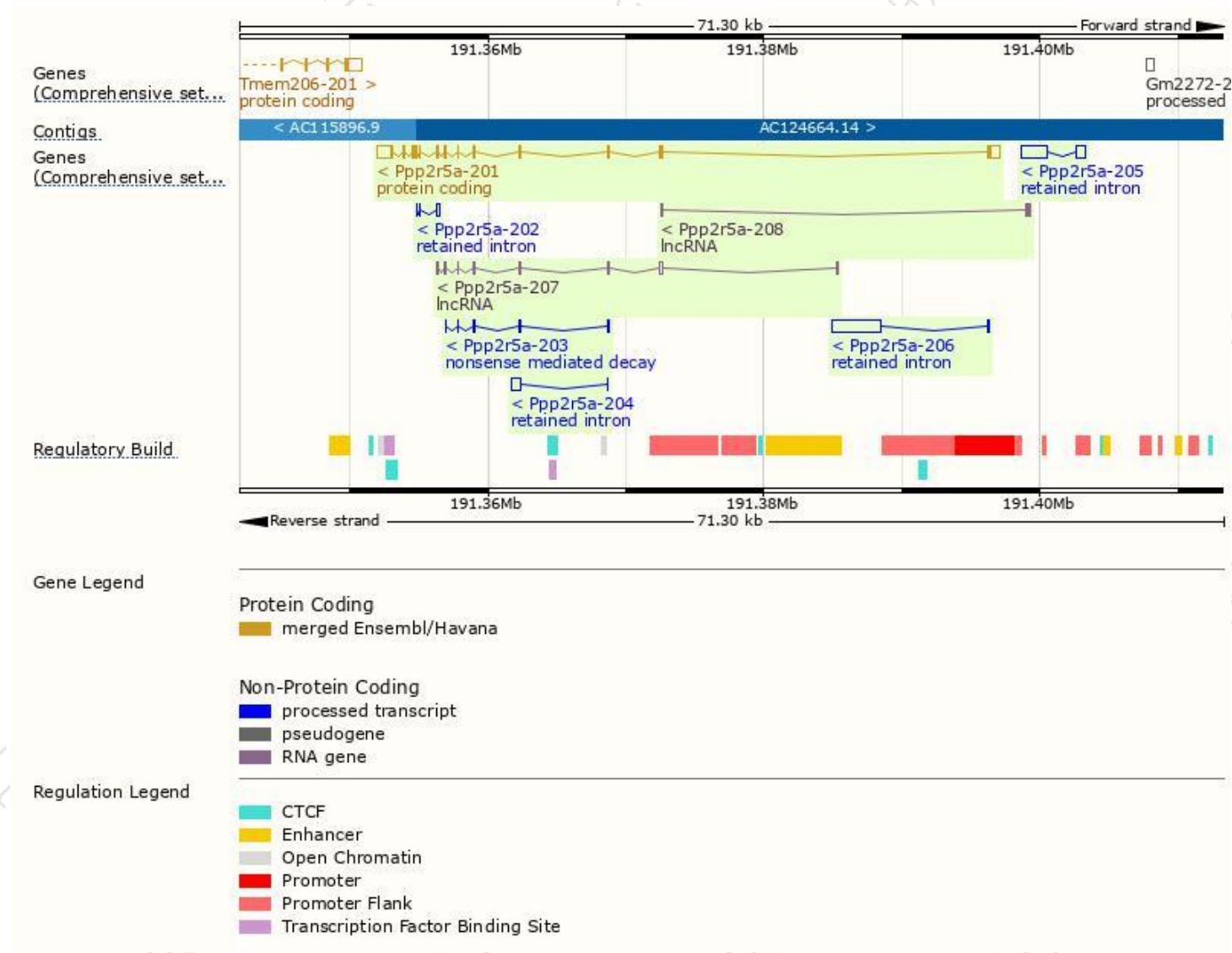
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ppp2r5a-201	ENSMUST00000067976.8	3088	486aa	Protein coding	CCDS15620	Q6PD03	TSL:1 GENCODE basic APPRIS P1
Ppp2r5a-203	ENSMUST00000191925.1	429	60aa	Nonsense mediated decay	-	A0A0A6YVV9	CDS 5' incomplete TSL:3
Ppp2r5a-206	ENSMUST00000194953.1	3541	No protein	Retained intron	-	-	TSL:1
Ppp2r5a-205	ENSMUST00000194832.1	2421	No protein	Retained intron	-	-	TSL:1
Ppp2r5a-204	ENSMUST00000192334.1	706	No protein	Retained intron	-	-	TSL:3
Ppp2r5a-202	ENSMUST00000191920.1	240	No protein	Retained intron	-	-	TSL:3
Ppp2r5a-207	ENSMUST00000195605.5	779	No protein	lncRNA	-	-	TSL:3
Ppp2r5a-208	ENSMUST00000195859.1	297	No protein	lncRNA	-	-	TSL:3

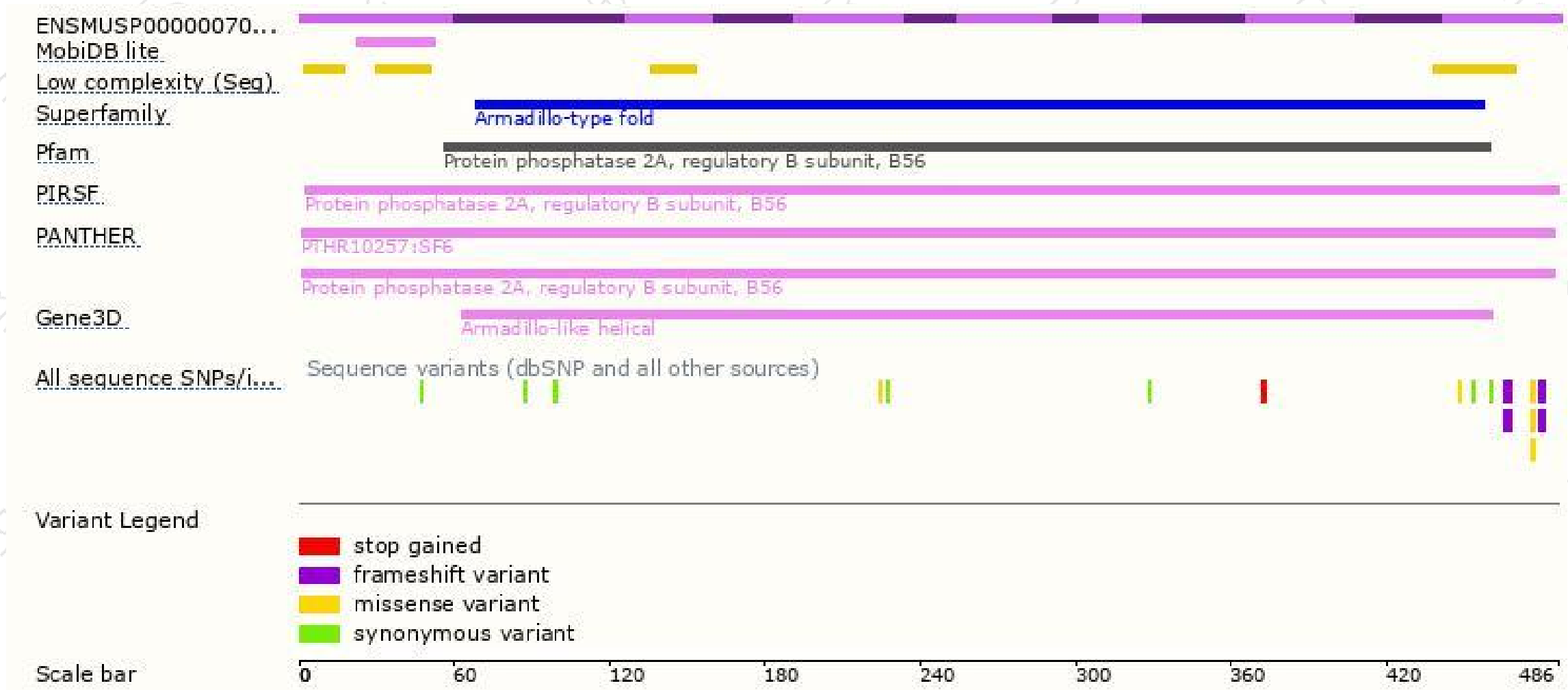
The strategy is based on the design of *Ppp2r5a-201* transcript,The transcription is shown below



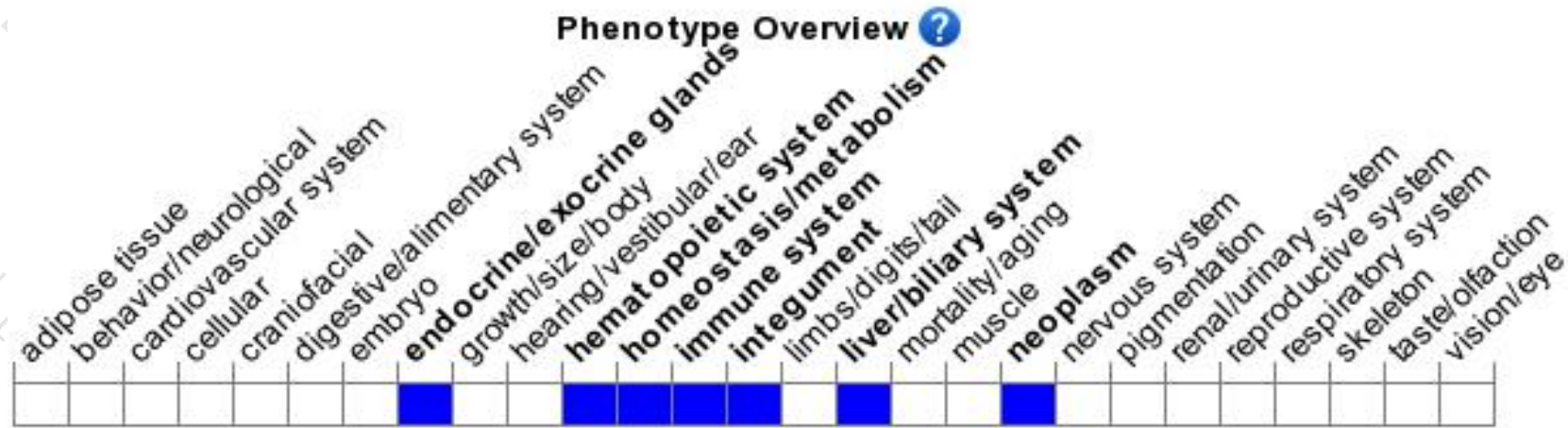
Genomic location distribution



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, Mice homozygous for a gene trap allele are hypomorphic, with the severely reduced expression causing development of spontaneous skin lesions combined with hair loss and enlarged liver, spleen and lymph nodes. They are also more susceptible to chemically induced skin tumors.

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

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