

# *Ppp1r3a* Cas9-KO Strategy

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**Reviewer:**

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# Project Overview

**Project Name**

*Ppp1r3a*

**Project type**

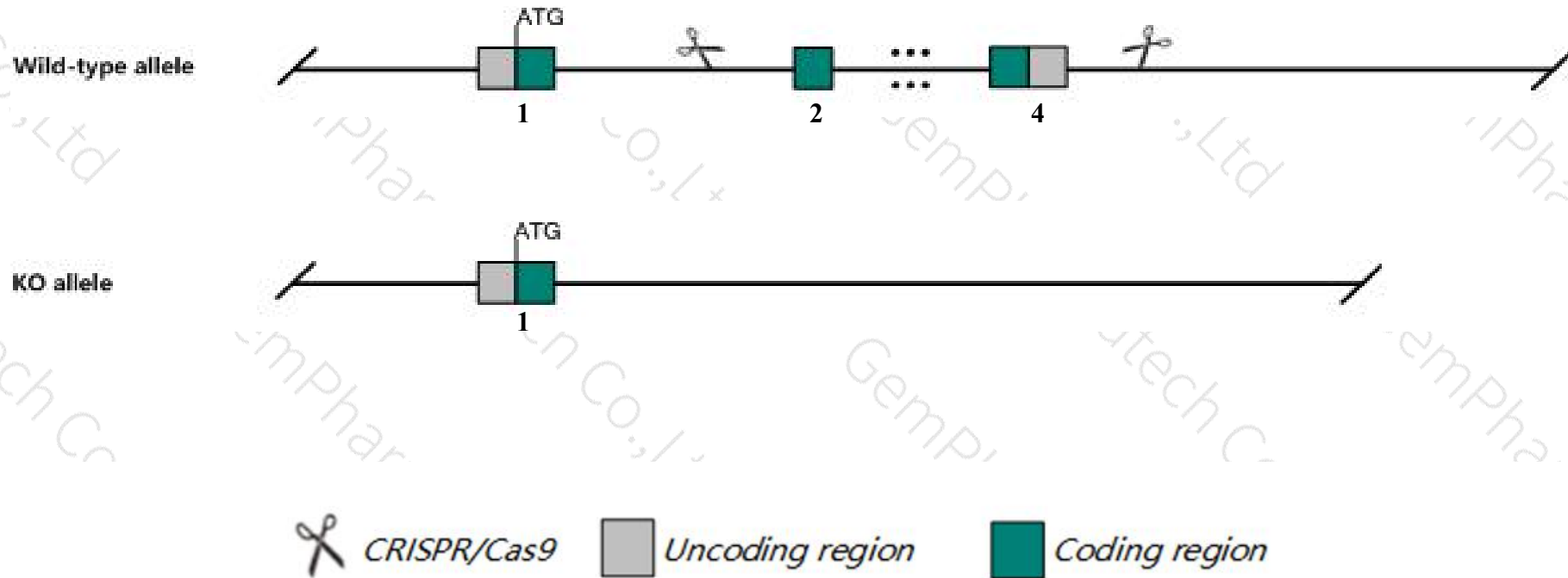
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ppp1r3a* gene. The schematic diagram is as follows:



- The *Ppp1r3a* gene has 1 transcript. According to the structure of *Ppp1r3a* gene, exon2-exon4 of *Ppp1r3a-201* (ENSMUST00000045096.5) 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 *Ppp1r3a* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous mutant mice have reduced levels of skeletal muscle glycogen. Whereas one model was normoglycemic and grossly normal, another on a similar genetic background was glucose intolerant, insulin resistant, and gained weight to the point of obesity.
- The *Ppp1r3a* gene is located on the Chr6. 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)

## Ppp1r3a protein phosphatase 1, regulatory subunit 3A [ *Mus musculus* (house mouse) ]

Gene ID: 140491, updated on 13-Mar-2020

### Summary

Official Symbol	Ppp1r3a provided by <a href="#">MGI</a>
Official Full Name	protein phosphatase 1, regulatory subunit 3A provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:2153588</a>
See related	<a href="#">Ensembl:ENSMUSG00000042717</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	GM; RG1; RGL
Expression	Biased expression in heart adult (RPKM 3.3) and mammary gland adult (RPKM 0.6) <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

The gene has 1 transcript,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ppp1r3a-201	<a href="#">ENSMUST00000045096.5</a>	6965	<a href="#">1089aa</a>	Protein coding	<a href="#">CCDS19917</a>	<a href="#">Q99MR9</a>	TSL:1 GENCODE basic APPRIS P1

The strategy is based on the design of *Ppp1r3a-201* transcript,The transcription is shown below

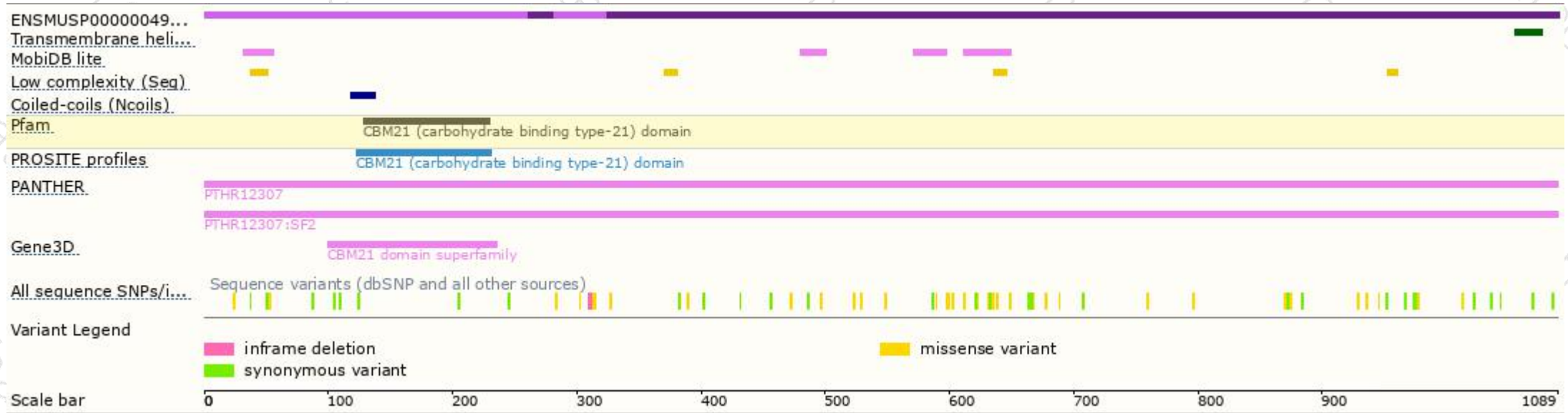


# Genomic location distribution

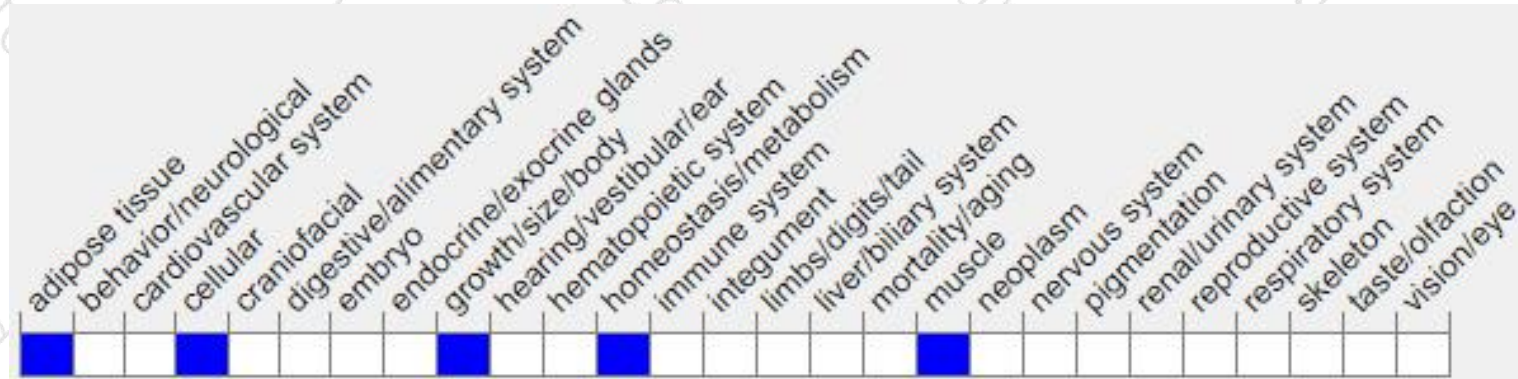




# Protein domain



# 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, Homozygous mutant mice have reduced levels of skeletal muscle glycogen. Whereas one model was normoglycemic and grossly normal, another on a similar genetic background was glucose intolerant, insulin resistant, and gained weight to the point of obesity.

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

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