

Prdx5 Cas9-CKO Strategy

Designer: Daohua Xu

Reviewer: Xueting Zhang

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Project Overview

Project Name

Prdx5

Project type

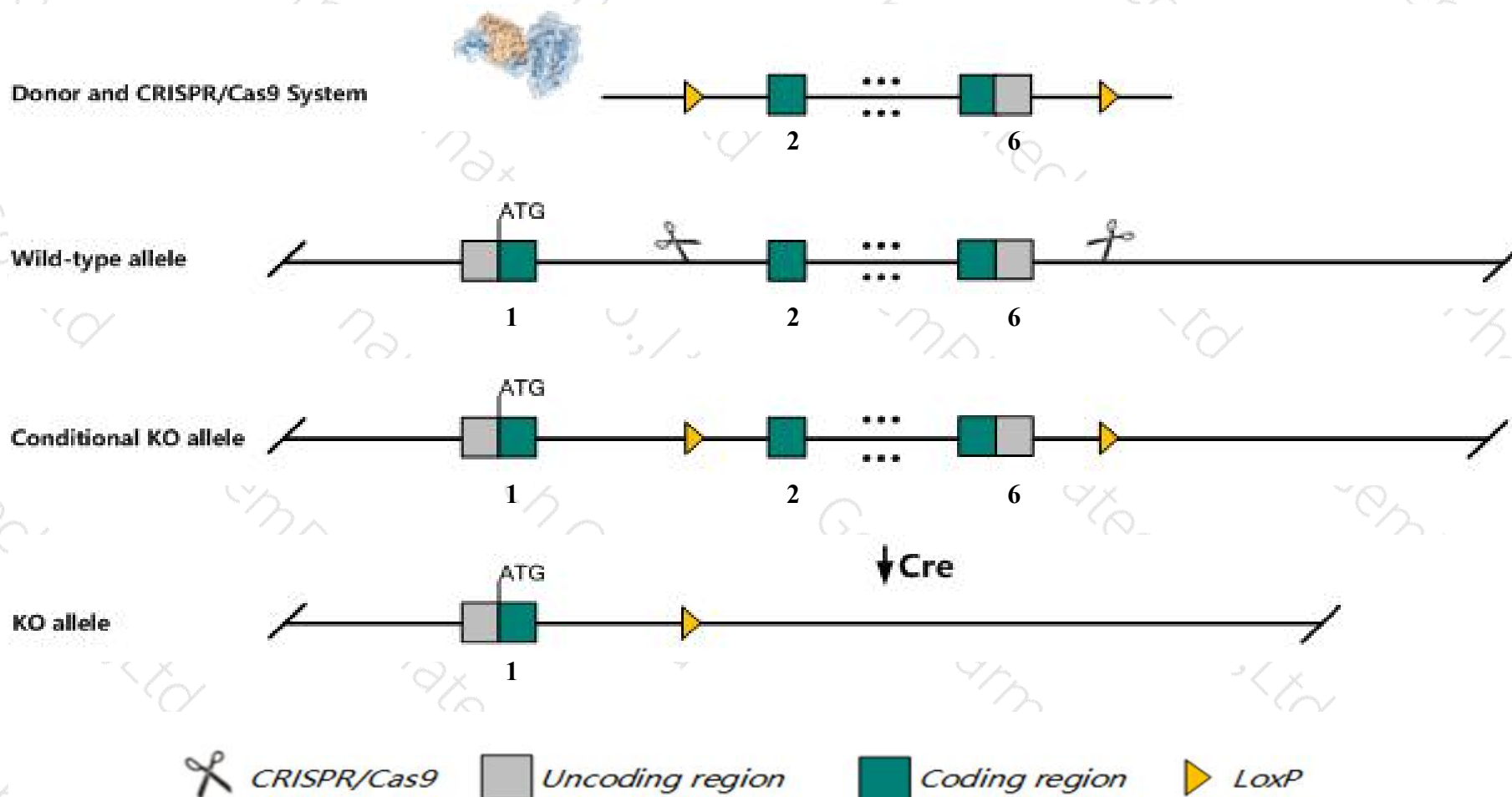
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Prdx5* gene. The schematic diagram is as follows:



Technical routes

- The *Prdx5* gene has 5 transcripts. According to the structure of *Prdx5* gene, exon2-exon6 of *Prdx5*-201(ENSMUST00000025904.11) 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 *Prdx5* gene. The brief process is as follows: CRISPR/Cas9 system 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 will be 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 KO region contains functional region of the *Trmt112* gene. Knockout the region may affect the function of *Trmt112* gene.
- The insertion site of 5-terminal Loxp may affect the 5-terminal regulation of *Prdx5*-203 transcript.
- The *Prdx5* gene is located on the Chr19. 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)

Prdx5 peroxiredoxin 5 [Mus musculus (house mouse)]

Gene ID: 54683, updated on 22-Mar-2020

Summary



Official Symbol Prdx5 provided by [MGI](#)

Official Full Name peroxiredoxin 5 provided by [MGI](#)

Primary source [MGI:MGI:1859821](#)

See related [Ensembl:ENSMUSG00000024953](#)

Gene type protein coding

RefSeq status REVIEWED

Organism [Mus musculus](#)

Lineage Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus

Also known as AOEB166, AOPP, PLP, Pmp20, Prdx6, PrxV

Summary This gene encodes a member of the peroxiredoxin family of antioxidant enzymes, which reduce hydrogen peroxide and alkyl hydroperoxides. The encoded protein plays an antioxidant protective role in different tissues under normal conditions and during inflammatory processes. The use of alternate transcription start sites may result in use of alternate in-frame translation start codons that generate alternate isoforms that are targeted to the mitochondrion or peroxisome/cytoplasm. [provided by RefSeq, Nov 2017]

Expression Ubiquitous expression in kidney adult (RPKM 737.0), heart adult (RPKM 197.2) and 27 other tissues [See more](#)

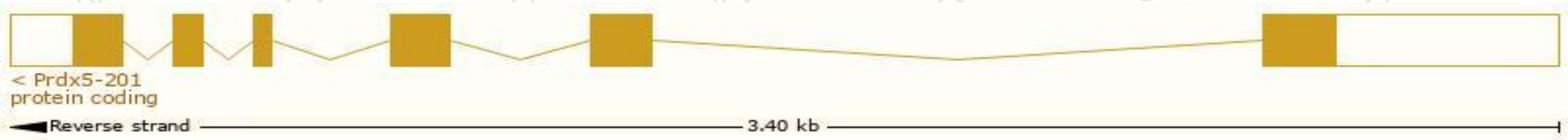
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

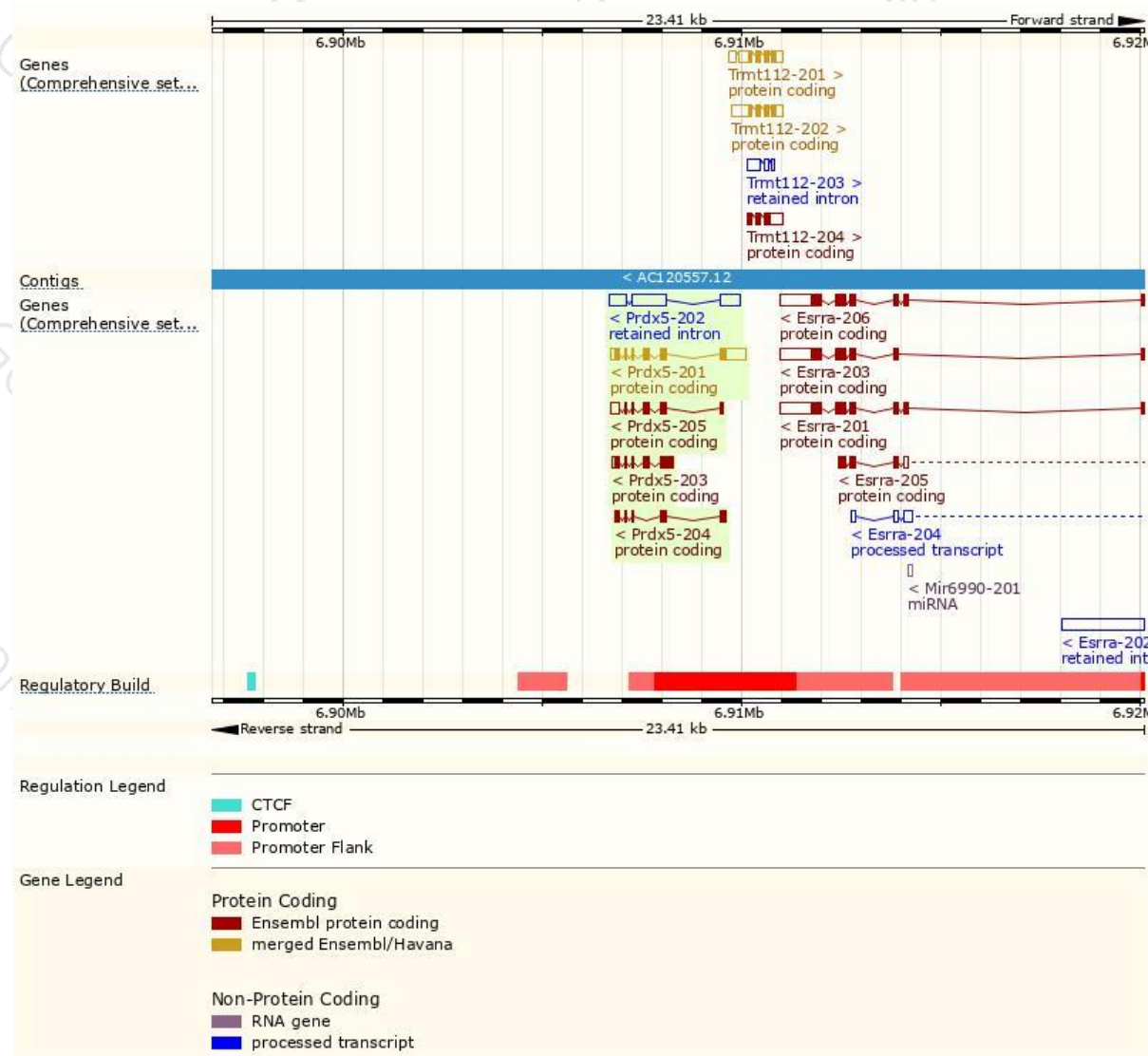
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Prdx5-201	ENSMUST00000025904.11	1262	210aa	Protein coding	CCDS29507	P99029	TSL:1 GENCODE basic APPRIS P2
Prdx5-203	ENSMUST00000149261.7	755	213aa	Protein coding	-	H3BJQ7	TSL:2 GENCODE basic APPRIS ALT2
Prdx5-205	ENSMUST00000238095.1	679	142aa	Protein coding	-	A0A494BAZ4	CDS 5' incomplete
Prdx5-204	ENSMUST00000173091.1	501	166aa	Protein coding	-	G3UZJ4	TSL:5 GENCODE basic
Prdx5-202	ENSMUST00000145300.1	1826	No protein	Retained intron	-	-	TSL:1

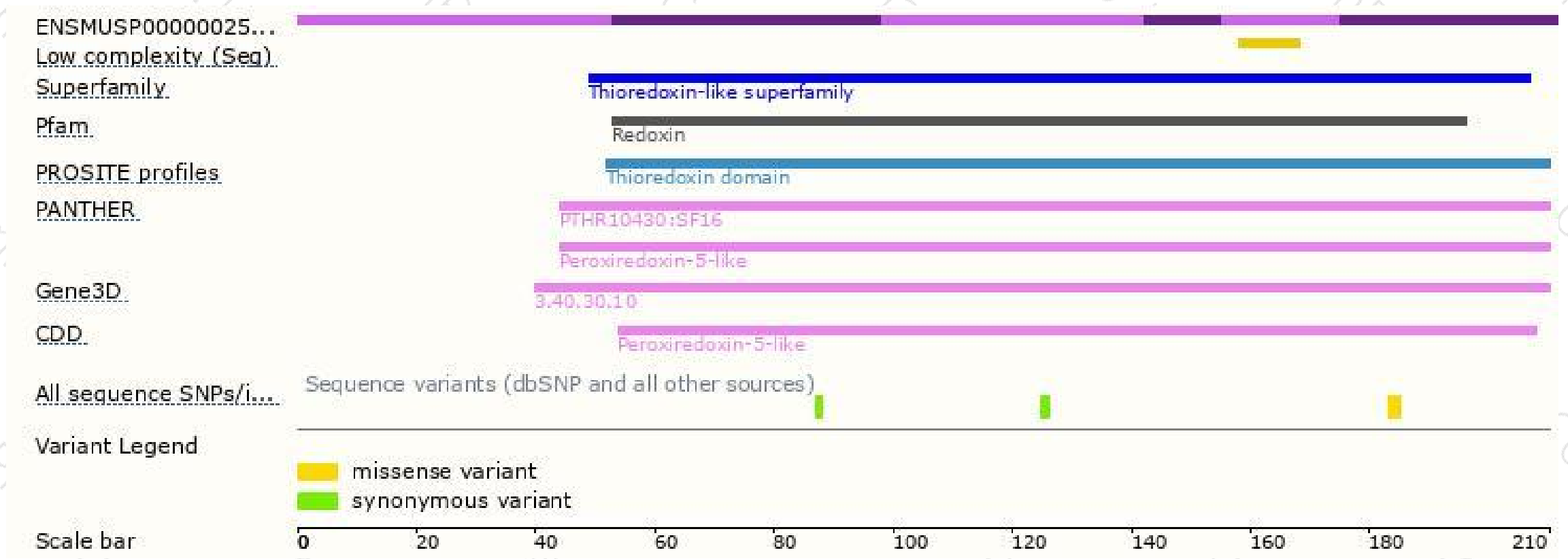
The strategy is based on the design of *Prdx5-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

Tel: 400-9660890

