

Ptgis Cas9-CKO Strategy

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Reviewer:

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Design Date:

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Project Overview

Project Name

Ptgis

Project type

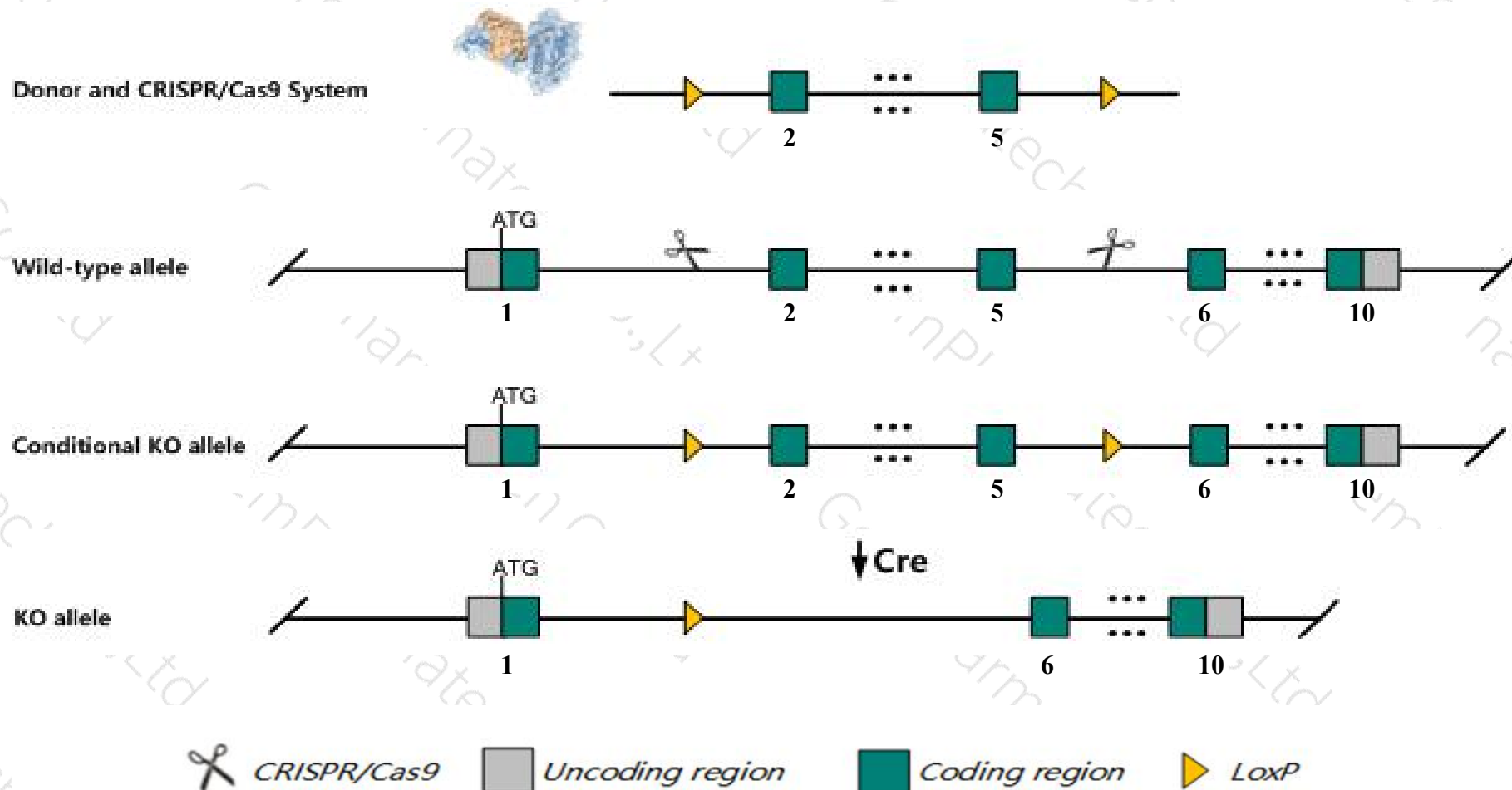
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Ptgis* gene has 3 transcripts. According to the structure of *Ptgis* gene, exon2-exon5 of *Ptgis*-201 (ENSMUST00000018113.7) transcript is recommended as the knockout region. The region contains 599bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ptgis* 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.

- According to the existing MGI data, Homozygous mutation of this gene results in increased blood urea nitrogen and creatinine levels, thickening of the aorta with age, mildly increased blood pressure, and kidney abnormalities including cysts, fibrosis, necrosis, and renal vascular congestion.
- The *Ptgis* 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)

Ptgis prostaglandin I2 (prostacyclin) synthase [*Mus musculus* (house mouse)]

Gene ID: 19223, updated on 12-Aug-2019

Summary

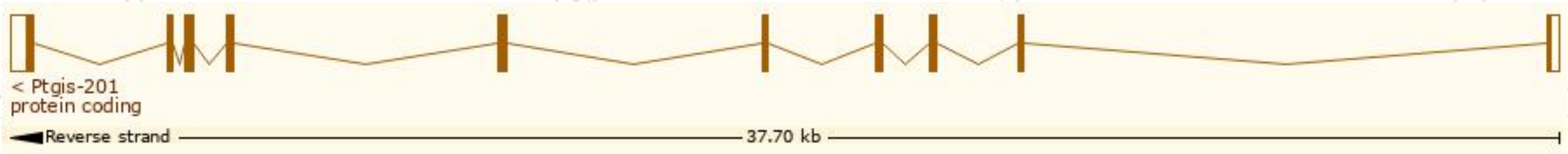
Official Symbol	Ptgis provided by MGI
Official Full Name	prostaglandin I2 (prostacyclin) synthase provided by MGI
Primary source	MGI:MGI:1097156
See related	Ensembl:ENSMUSG00000017969
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Cyp8; Pgis; Cyp8a1
Expression	Broad expression in lung adult (RPKM 56.6), ovary adult (RPKM 52.9) and 16 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

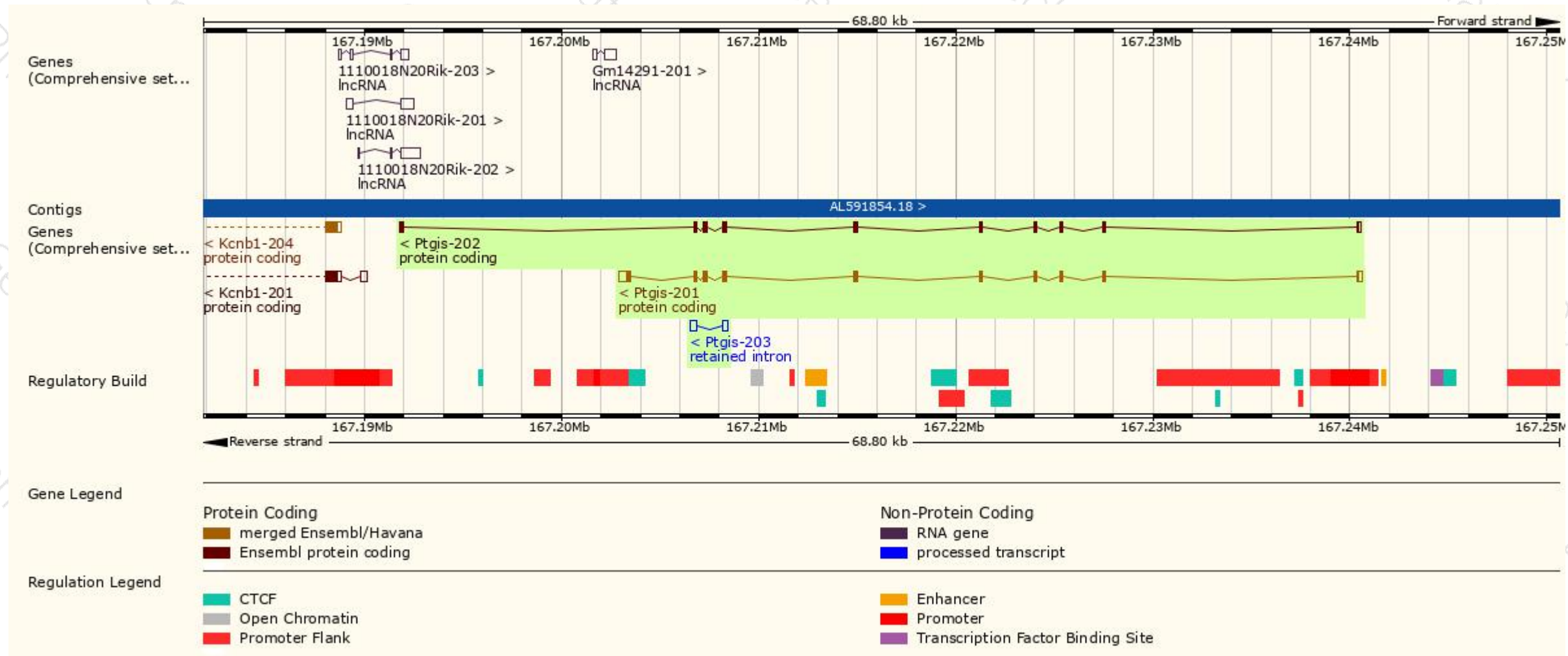
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ptgis-203	ENSMUST00000136271.1	600	No protein	Retained intron	-	-	TSL:3
Ptgis-201	ENSMUST00000018113.7	2107	501aa	Protein coding	CCDS17097	Q35074	TSL:1 GENCODE basic APPRIS P1
Ptgis-202	ENSMUST000000088041.10	1711	509aa	Protein coding	-	Q8BXC0	TSL:1 GENCODE basic

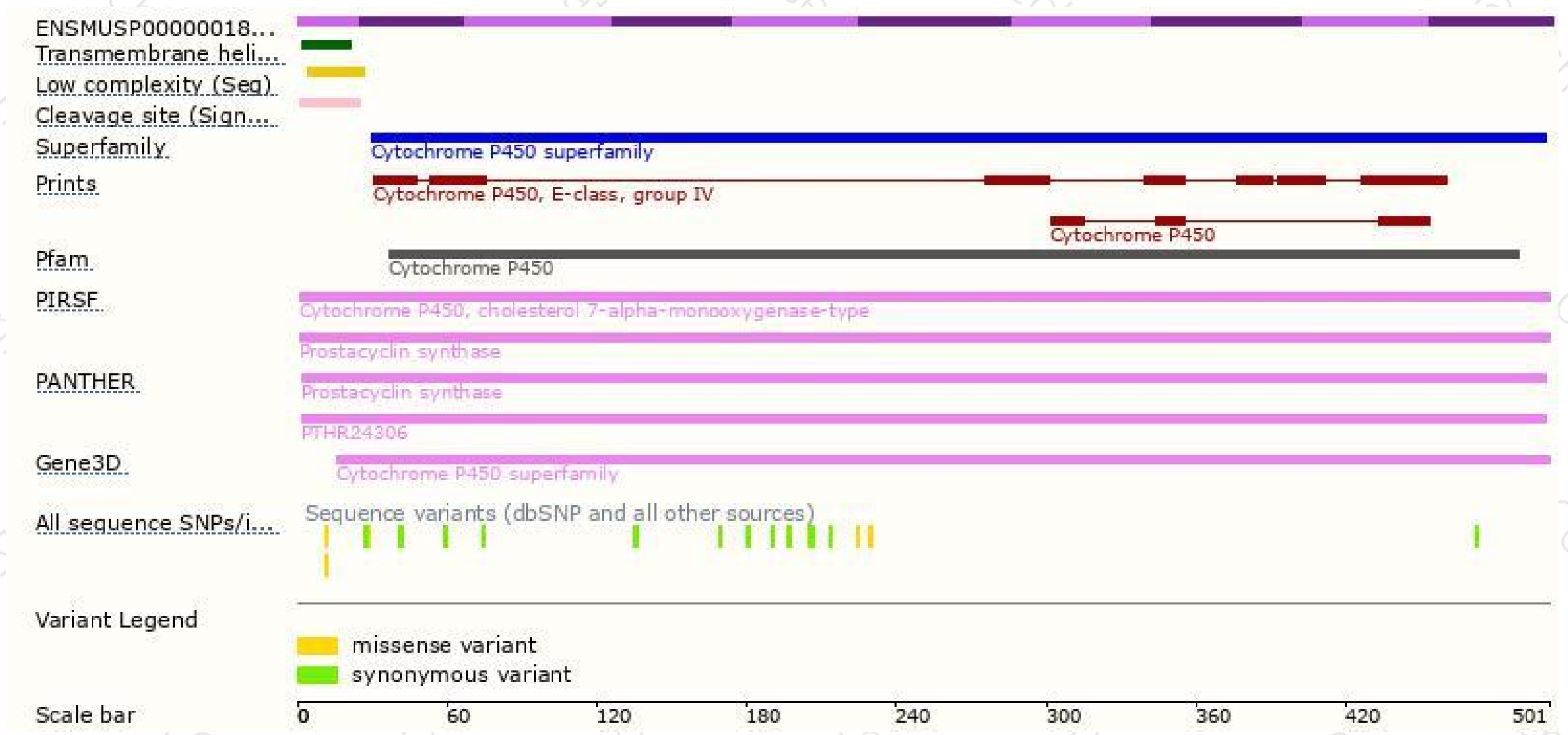
The strategy is based on the design of *Ptgis-201* transcript, the transcription is shown below:



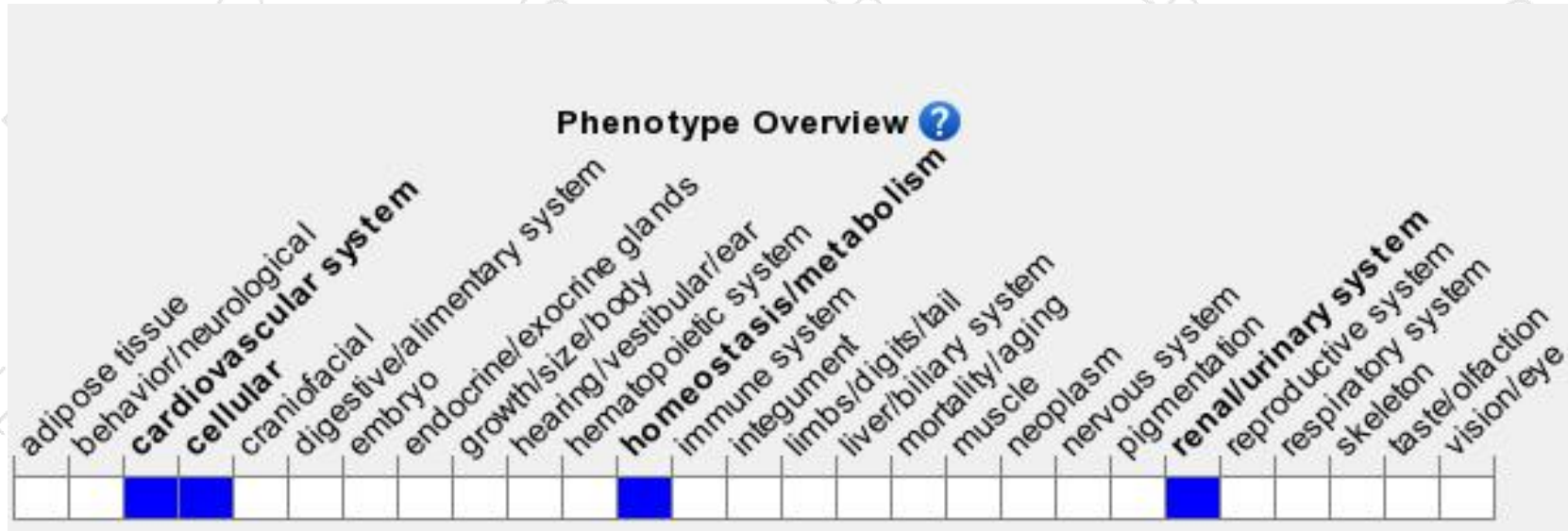
Genomic location distribution



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 mutation of this gene results in increased blood urea nitrogen and creatinine levels, thickening of the aorta with age, mildly increased blood pressure, and kidney abnormalities including cysts, fibrosis, necrosis, and renal vascular congestion.

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

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