

Ptges2 Cas9-KO Strategy

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Reviewer:

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Design Date:

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Project Overview

Project Name

Ptges2

Project type

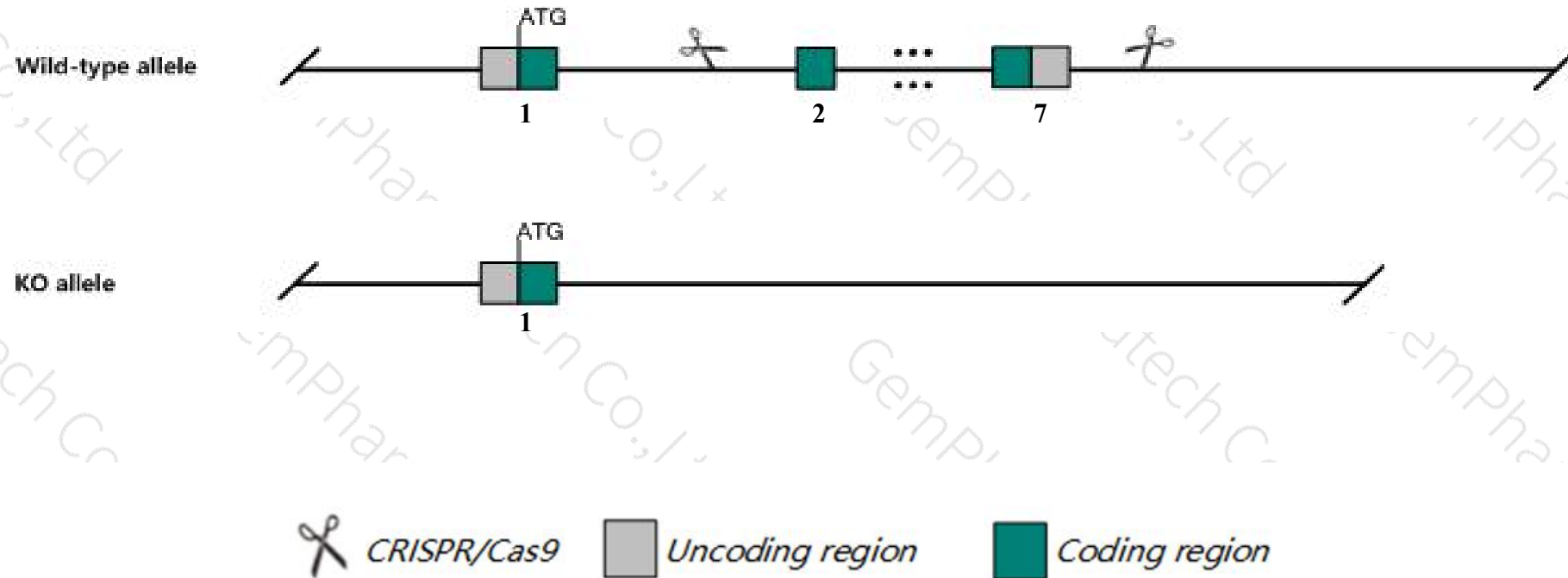
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ptges2* gene. The schematic diagram is as follows:



- The *Ptges2* gene has 3 transcripts. According to the structure of *Ptges2* gene, exon2-exon7 of *Ptges2-201* (ENSMUST00000028162.4) 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 *Ptges2* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit normal basal prostaglandin E2 (PGE2) protein levels in the lactating mammary gland. Mice homozygous for a different knock-out allele exhibit increased sensitivity to IgE antigen-dependent passive cutaneous anaphylaxis.
- The KO region contains functional region of the *Gm13413* gene. Knockout the region may affect the function of *Gm13413* gene.
- The *Ptges2* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Ptges2 prostaglandin E synthase 2 [Mus musculus (house mouse)]

Gene ID: 96979, updated on 31-Jan-2019

Summary



Official Symbol Ptges2 provided by [MGI](#)

Official Full Name prostaglandin E synthase 2 provided by [MGI](#)

Primary source [MGI:MGI:1917592](#)

See related [Ensembl:ENSMUSG00000026820](#)

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 0610038H10Rik, C79137, Gbf1, Mpges2, Pges2

Summary The protein encoded by this gene is a Golgi membrane-associated prostaglandin E synthase candidate, which is capable of catalyzing the conversion of prostaglandin H2 to prostaglandin E2 in vitro. However, a study using mice deficient of this gene suggests that this enzyme does not contribute to prostaglandin E2 biosynthesis in vivo. This protein is synthesized as a Golgi membrane-bound protein, but its N-terminal hydrophobic region is cleaved off during protein maturation to produce the predominant soluble truncated form that still retains the enzyme activity. This soluble protein also has been shown to activate the transcription regulated by a gamma-interferon-activated transcription element (GATE), possibly via an interaction with CAAAT/enhancer-binding protein-beta. [provided by RefSeq, Oct 2009]

Expression Ubiquitous expression in adrenal adult (RPKM 50.1), duodenum adult (RPKM 41.1) and 28 other tissues [See more](#)

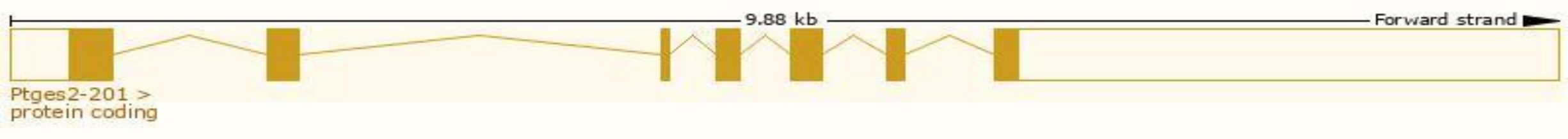
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

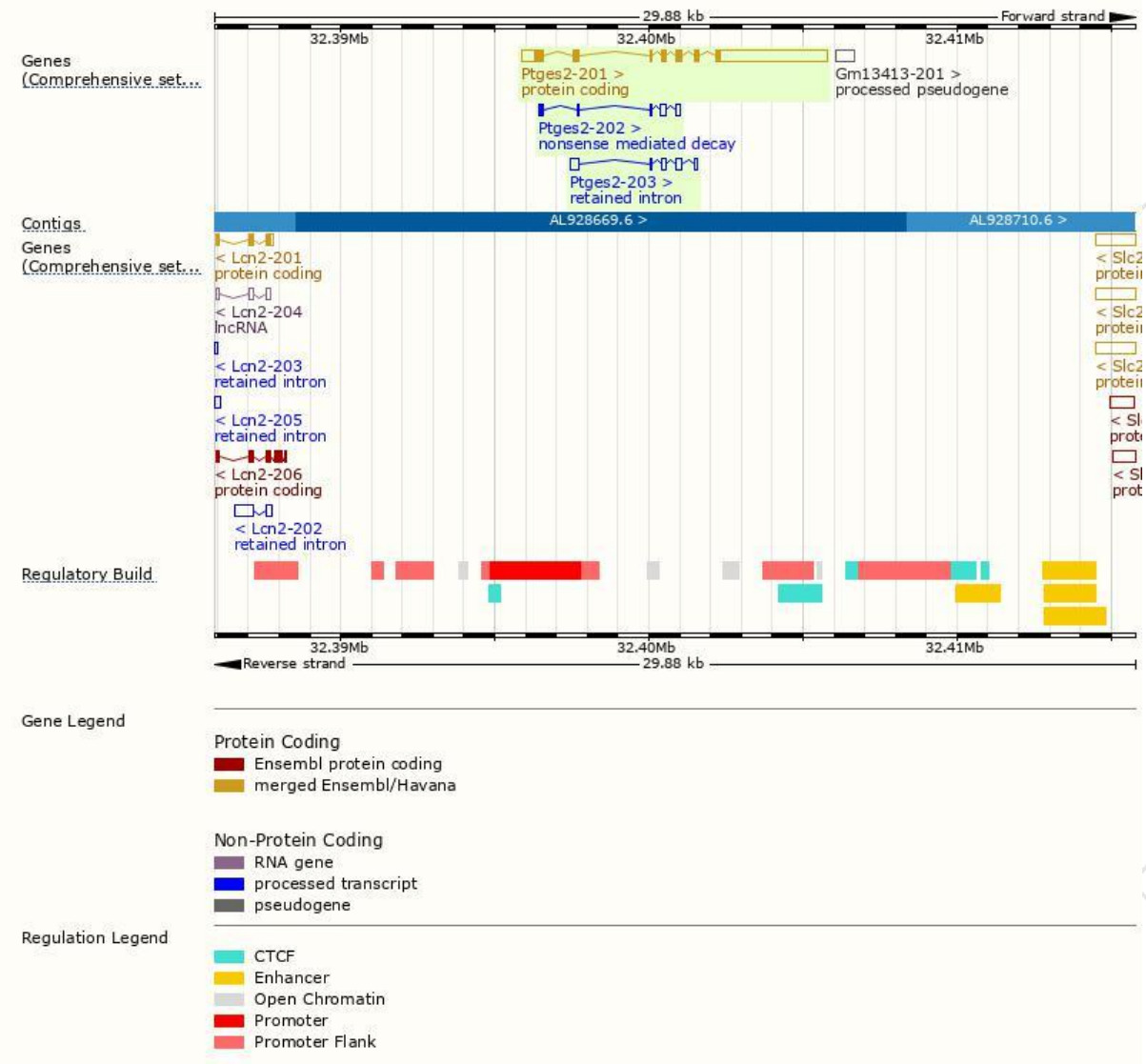
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ptges2-201	ENSMUST00000028162.4	4978	384aa	Protein coding	CCDS15914	Q8BWM0	TSL:1 GENCODE basic APPRIS P1
Ptges2-202	ENSMUST00000123714.3	519	54aa	Nonsense mediated decay	-	A0A0A6YWP8	CDS 5' incomplete TSL:2
Ptges2-203	ENSMUST00000130121.2	765	No protein	Retained intron	-	-	TSL:3

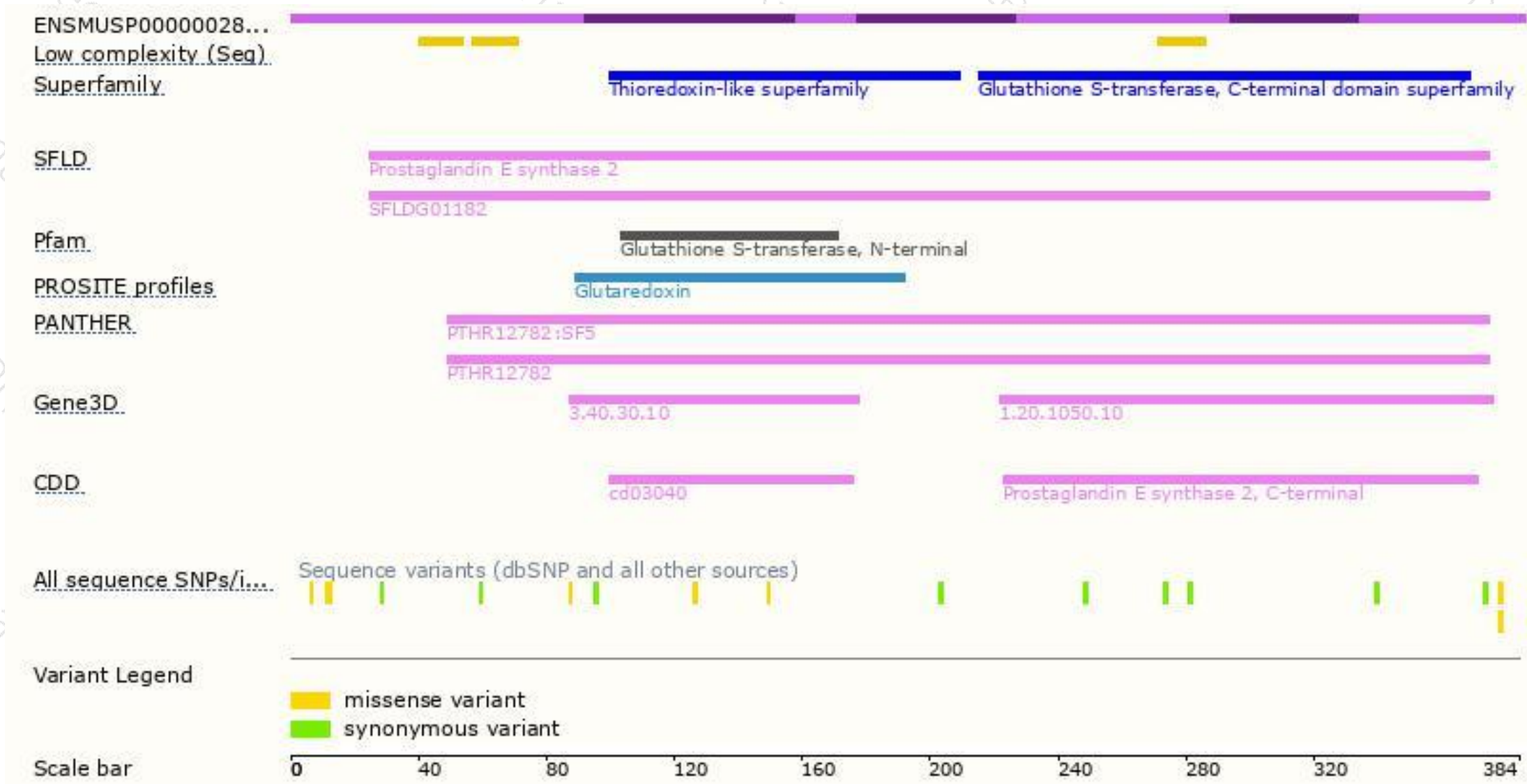
The strategy is based on the design of *Ptges2-201* transcript,The transcription is shown below



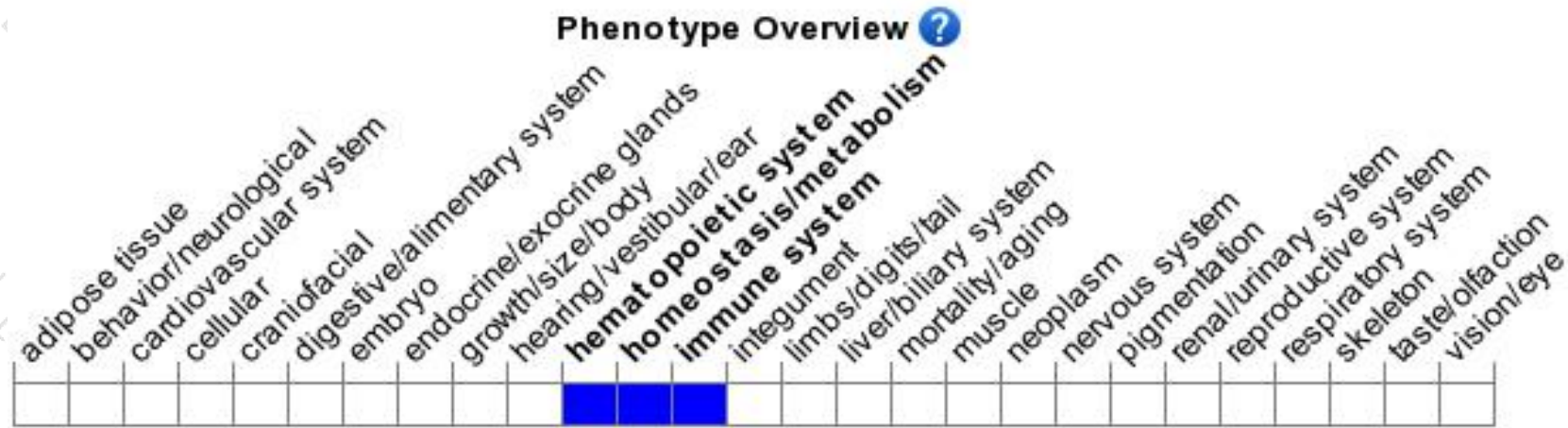
Genomic location distribution



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 knock-out allele exhibit normal basal prostaglandin E2 (PGE2) protein levels in the lactating mammary gland. Mice homozygous for a different knock-out allele exhibit increased sensitivity to IgE antigen-dependent passive cutaneous anaphylaxis.

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

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