Ptgds Cas9-KO Strategy

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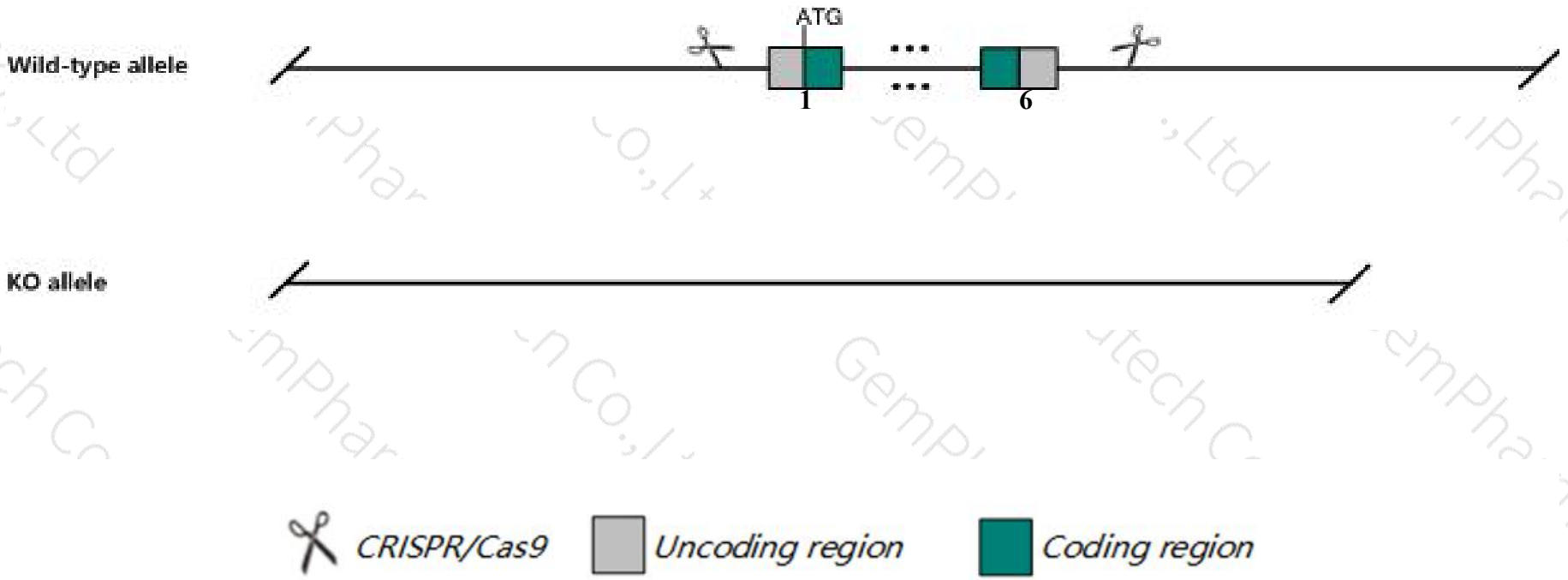
Project Overview

Project Name	***Ptgds***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

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



Technical routes

➢ The *Ptgds* gene has 5 transcripts. According to the structure of *Ptgds* gene, exon1-exon6 of *Ptgds-201* (ENSMUST00000015234.12) transcript is recommended as the knockout region.The region contains all 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 *Ptgds* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Mice homozygous for one knock-out allele fail to exhibit PGE2- and bicuculline-induced allodynia and exhibit decreased susceptibility to IgE-induced PCA. Mice homozygous for another knock-out allele show normal induction of muscle injury after reperfusion of ischemic skeletal muscle.
- The knockout region is near to the N-terminal of *Paxx* gene,this strategy may influence the regulatory function of the N-terminal of *Paxx* gene.
- The *Ptgds* 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）

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Ptgds prostaglandin D2 synthase (brain) [*Mus musculus* (house mouse)]

Gene ID: 19215, updated on 15-Oct-2019

Summary

Official Symbol	Ptgds provided by MGI
Official Full Name	prostaglandin D2 synthase (brain) provided by MGI
Primary source	MGI:MGI:99261
See related	Ensembl:ENSMUSG00000015090
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	PGD2; PGDS; 21kDa; PGDS2; Ptgs3; L-PGDS
Expression	Biased expression in genital fat pad adult (RPKM 446.8), frontal lobe adult (RPKM 410.4) and 5 other tissues See more
Orthologs	human all

Genomic context

Location: 2 A3; 2 17.28 cM

See Ptgds in Genome Data Viewer

Exon count: 8

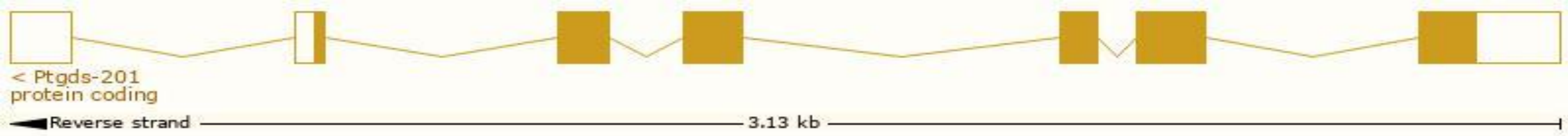
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	2	NC_000068.7 (25466709..25470110, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	2	NC_000068.6 (25322232..25325269, complement)

Transcript information（Ensembl）

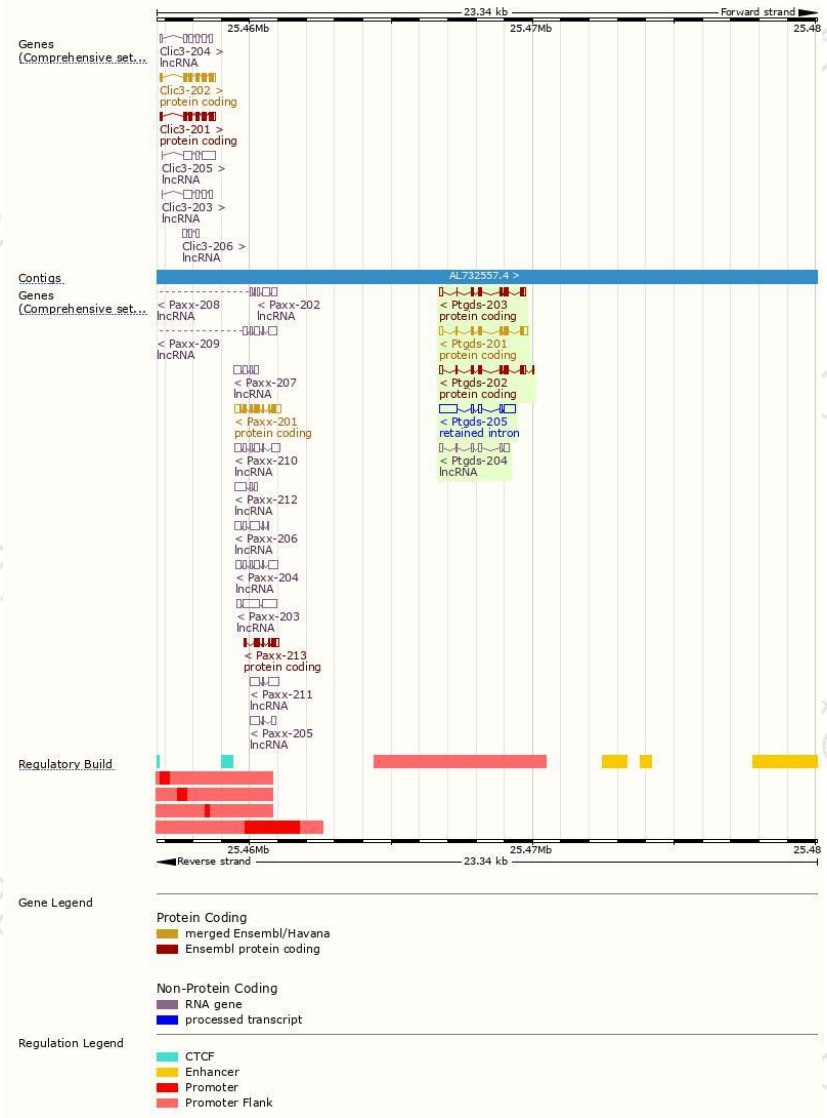
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ptgds-201	ENSMUST00000015234.12	901	189aa	Protein coding	CCDS38074	O09114	TSL:1 GENCODE basic APPRIS P1
Ptgds-202	ENSMUST00000114251.7	830	189aa	Protein coding	CCDS38074	O09114	TSL:5 GENCODE basic APPRIS P1
Ptgds-203	ENSMUST00000114259.2	775	189aa	Protein coding	CCDS38074	O09114	TSL:2 GENCODE basic APPRIS P1
Ptgds-205	ENSMUST00000144016.7	1327	No protein	Retained intron	-	-	TSL:1
Ptgds-204	ENSMUST00000137417.1	645	No protein	lncRNA	-	-	TSL:1

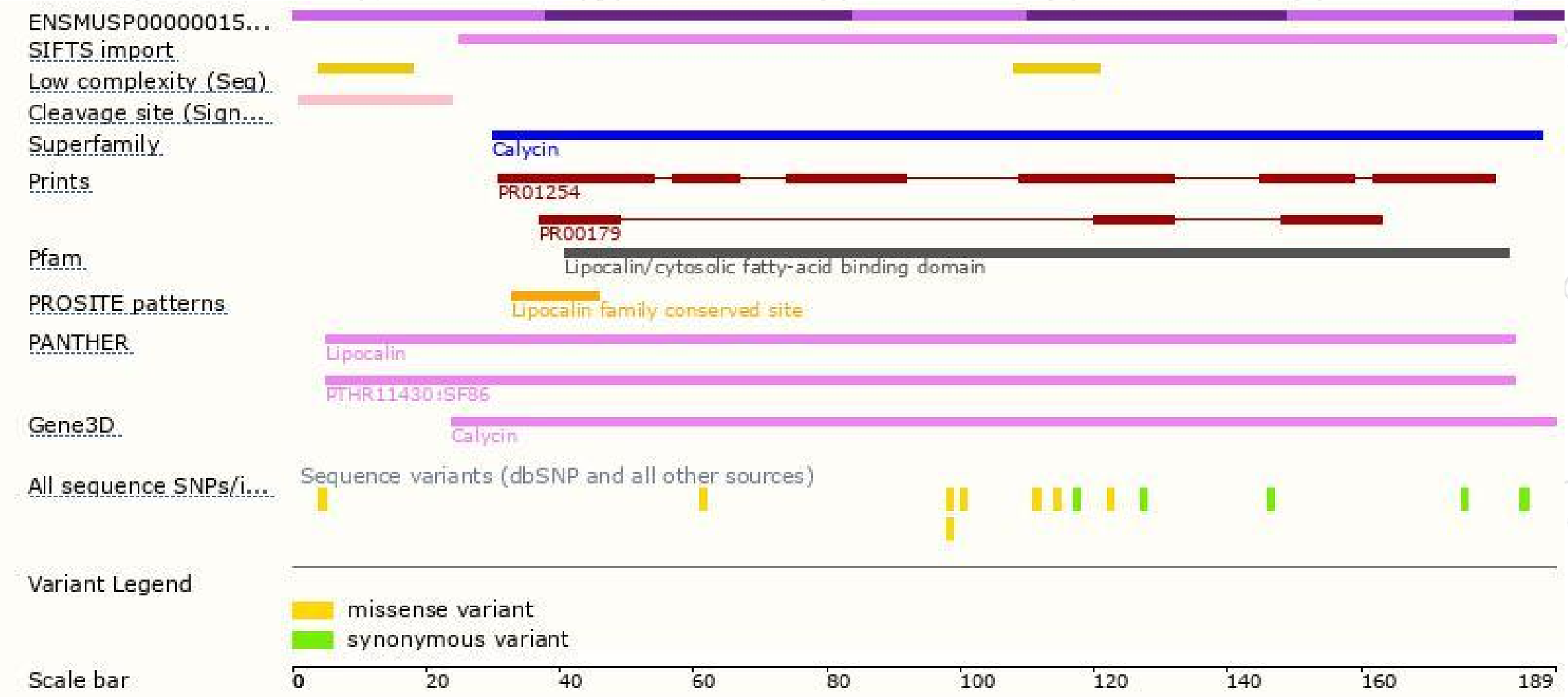
The strategy is based on the design of *Ptgds-201* transcript,The transcription is shown below



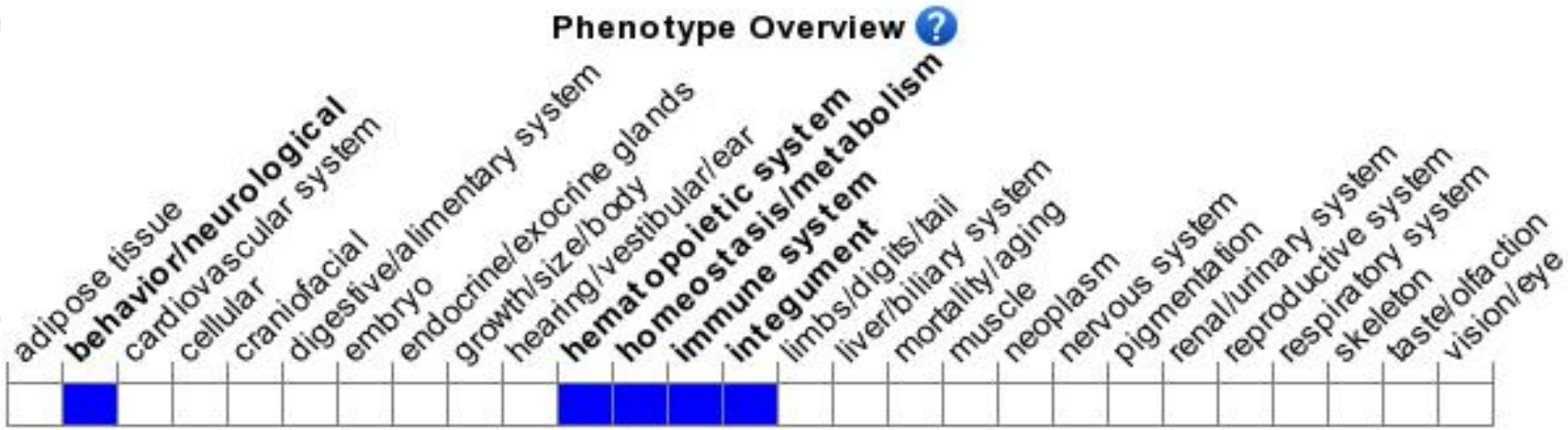
Genomic location distribution



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 one knock-out allele fail to exhibit PGE2- and bicuculline-induced allodynia and exhibit decreased susceptibility to IgE-induced PCA. Mice homozygous for another knock- normal induction of muscle injury after reperfusion of ischemic skeletal muscle.

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

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