Ptgdr2 Cas9-KO Strategy

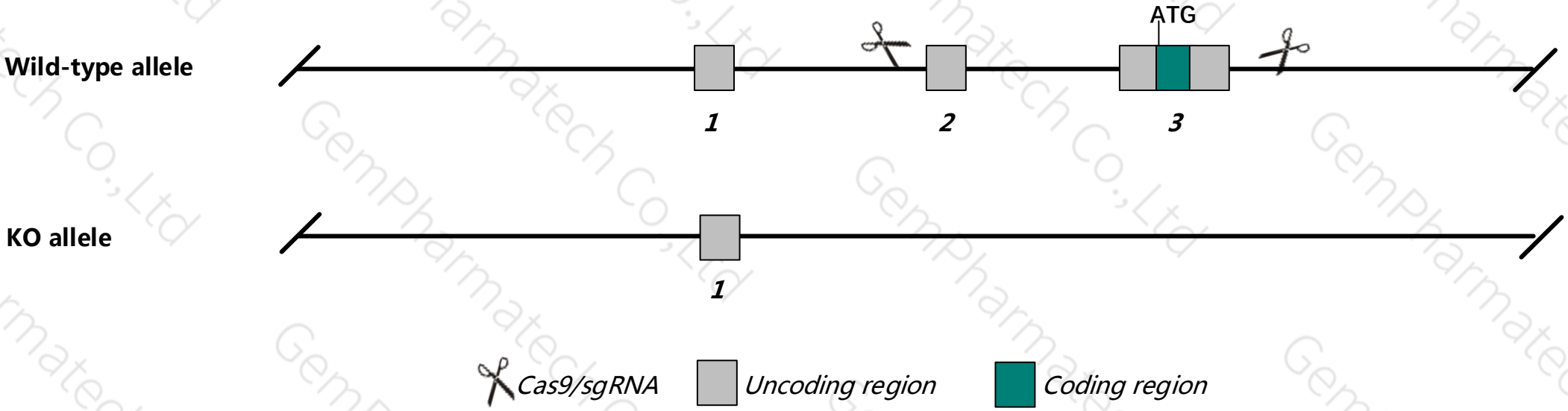
Designer: Yanhua Shen
Reviewer：Xueting Zhang
Design Date: 2020-3-3

Project Overview

Project Name	***Ptgdr2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ptgdr2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Ptgdr2* gene has 1 transcript. According to the structure of *Ptgdr2* gene, exon2-exon3 of *Ptgdr2-201* (ENSMUST00000037261.3) 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 *Ptgdr2* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA 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.

Notice

- According to the existing MGI data,Mice homozygous for a knock-out allele show enhanced IL-5 production and eosinophil recruitment into the lung in an allergic airway inflammatory model. In contrast, mice homozygous for a second knock-out allele exhibit lower serum IgE levels and reduced IgE-mediated inflammatory responses in skin.
- *Ccdc86* gene may be destroyed.
- The *Ptgdr2* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information （NCBI）

集萃药康 GemPharmatech

Ptgdr2 prostaglandin D2 receptor 2 [*Mus musculus* (house mouse)]

Gene ID: 14764, updated on 27-Feb-2020

Summary

Official Symbol	Ptgdr2 provided by MGI
Official Full Name	prostaglandin D2 receptor 2 provided by MGI
Primary source	MGI:MGI:1330275
See related	Ensembl:ENSMUSG00000034117
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	Crth2; Gpr44; Grp45
Expression	Broad expression in ovary adult (RPKM 2.6), subcutaneous fat pad adult (RPKM 1.9) and 15 other tissues See more
Orthologs	human all

Genomic context

Location: 19; 19 A

See Ptgdr2 in Genome Data Viewer

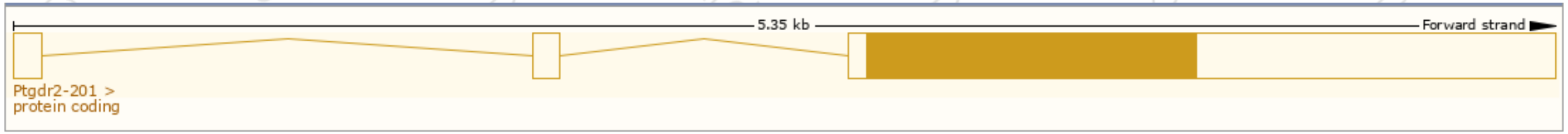
Exon count: 7

Transcript information（Ensembl）

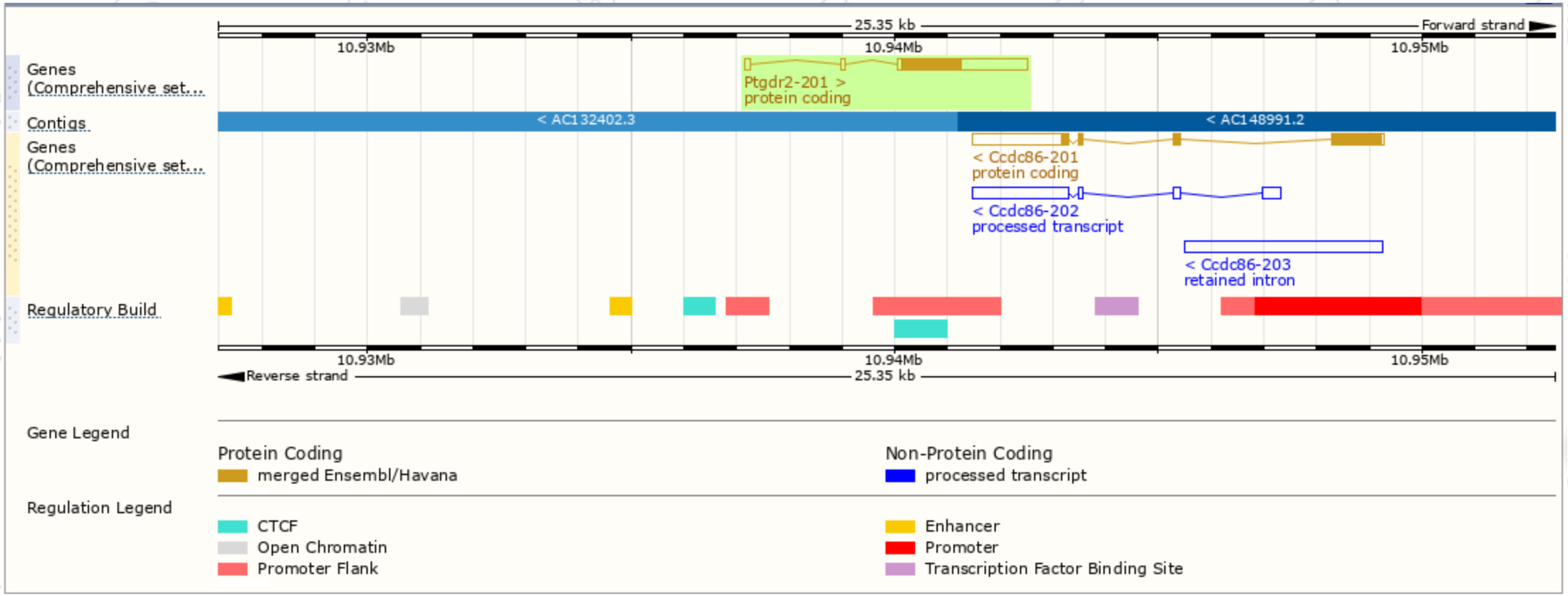
The gene has 1 transcript,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ptgdr2-201	ENSMUST00000037261.3	2644	382aa	Protein coding	CCDS29592	Q9Z2J6	TSL:1 GENCODE basic APPRIS P1

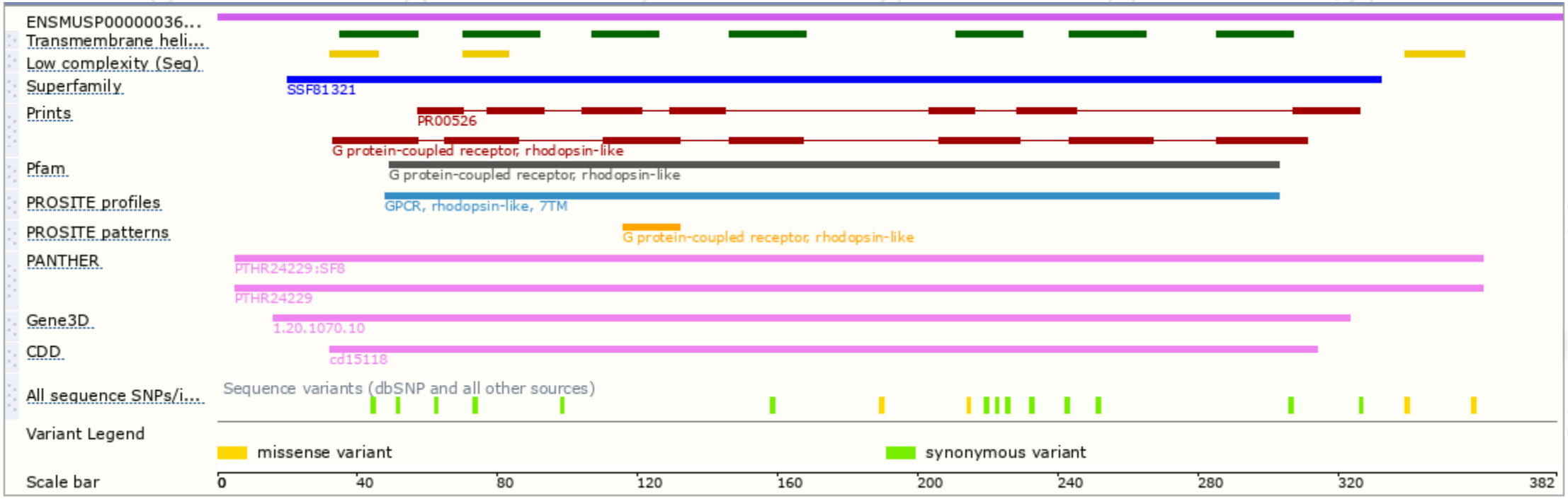
The strategy is based on the design of *Ptgdr2-201* transcript,The transcription is shown below



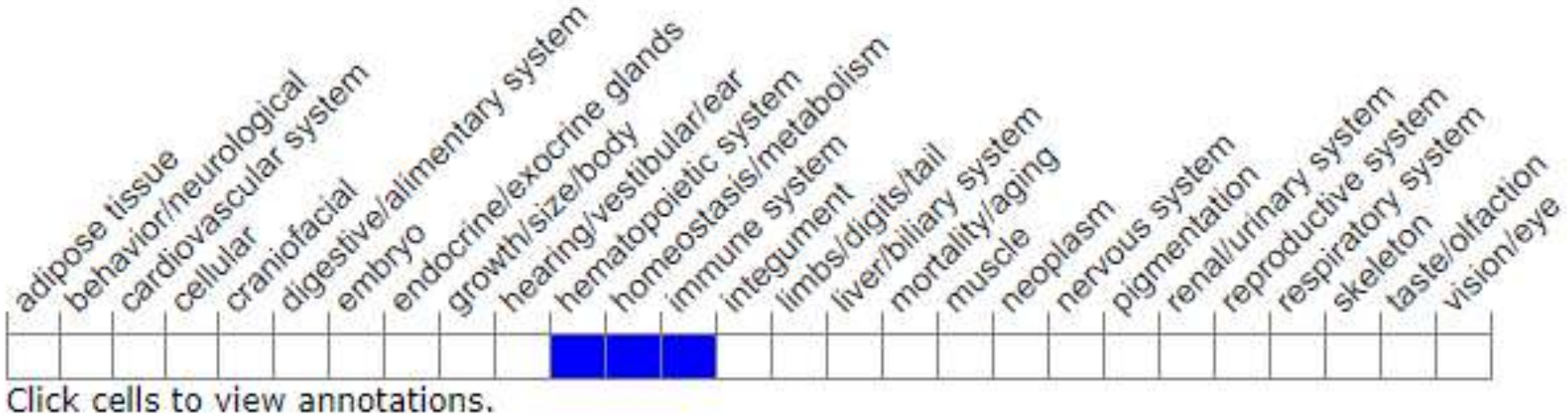
Genomic location distribution



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 show enhanced IL-5 production and eosinophil recruitment into the lung in an allergic airway inflammatory model. In contrast, mice homozygous for a second knock-out allele exhibit lower serum IgE levels and reduced IgE-mediated inflammatory responses in skin.

集萃药康
GemPharmatech

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

Tel: 025-5864 1534

集萃药康生物科技
GemPharmatech Co.,Ltd