

Pla2g3 Cas9-KO Strategy

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Project Overview

Project Name

Pla2g3

Project type

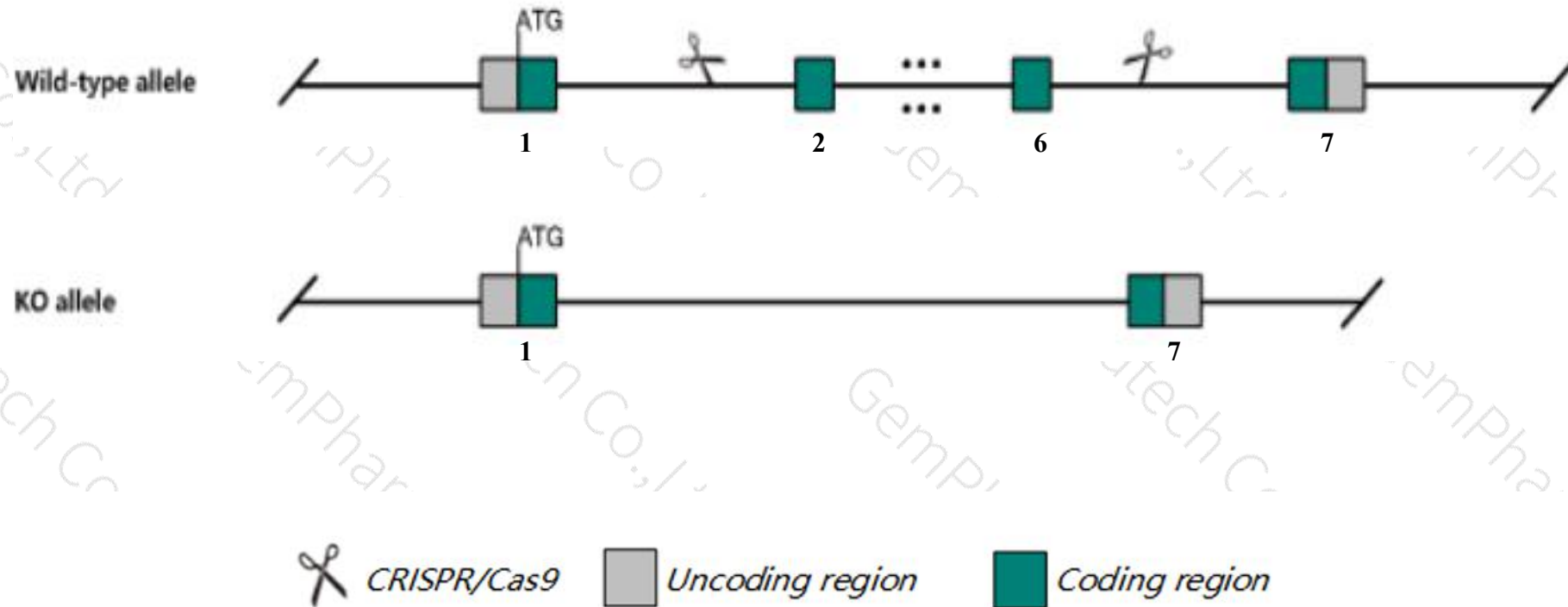
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pla2g3* gene. The schematic diagram is as follows:



- The *Pla2g3* gene has 3 transcripts. According to the structure of *Pla2g3* gene, exon2-exon6 of *Pla2g3*-202(ENSMUST00000064265.12) transcript is recommended as the knockout region. The region contains 799bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Pla2g3* gene. The brief process is as follows: CRISPR/Cas9 system 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.

- According to the existing MGI data, homozygous mice have reduced male fertility with smaller litter size and decreased susceptibility to IgE antigen-induced passive systemic and cutaneous anaphylaxis due to impaired mast cell maturation, degranulation and histamine release.
- The *Pla2g3* gene is located on the Chr11. 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)

Pla2g3 phospholipase A2, group III [Mus musculus (house mouse)]

Gene ID: 237625, updated on 13-Mar-2020

Summary



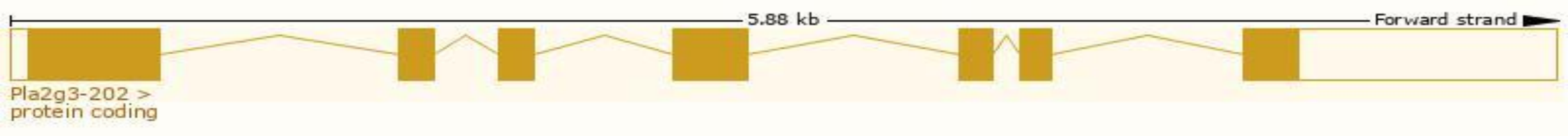
Official Symbol	Pla2g3 provided by MGI
Official Full Name	phospholipase A2, group III provided by MGI
Primary source	MGI:MGI:2444945
See related	Ensembl:ENSMUSG00000034579
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Broad expression in colon adult (RPKM 2.6), frontal lobe adult (RPKM 2.2) and 18 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

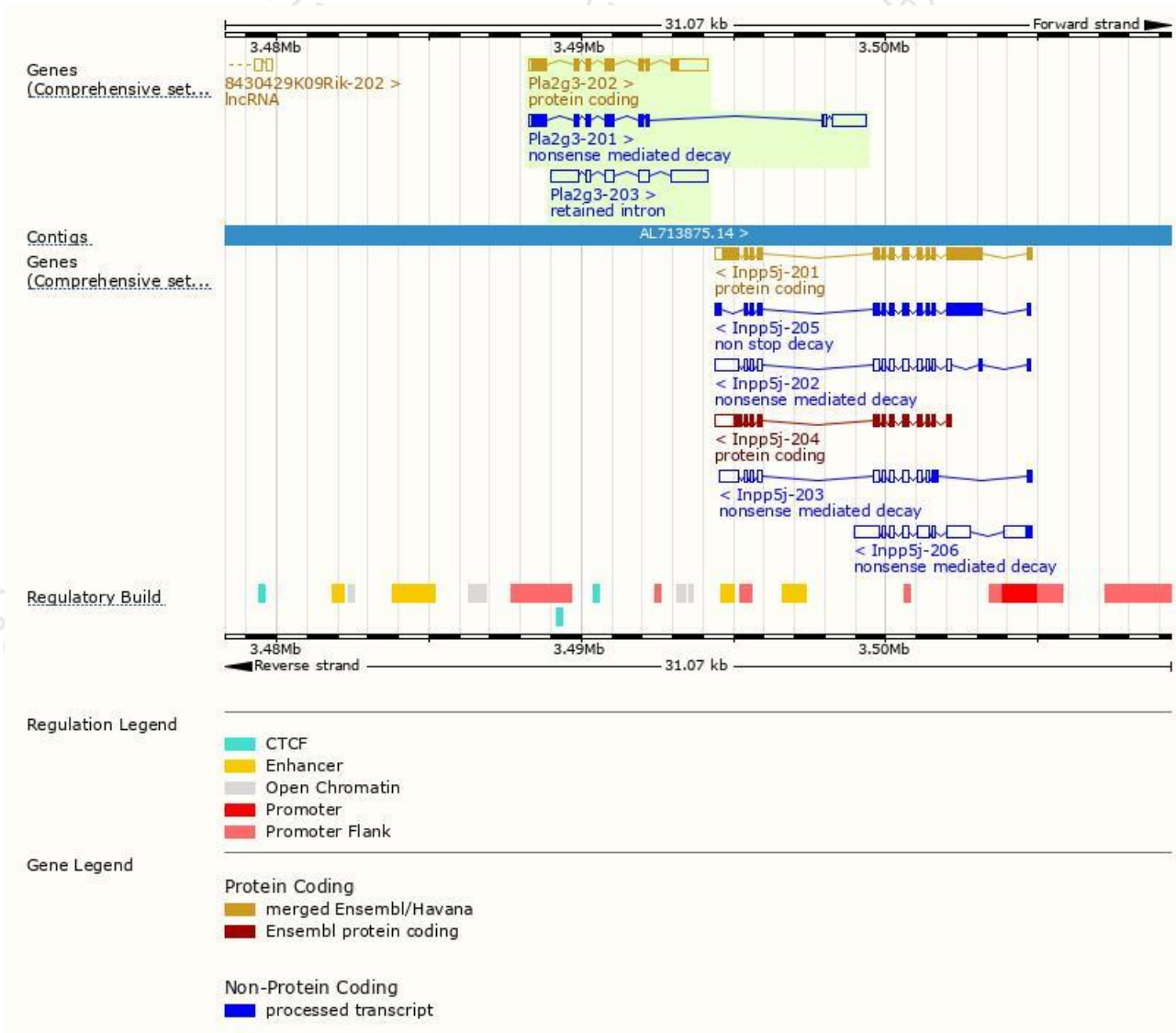
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pla2g3-202	ENSMUST00000064265.12	2566	504aa	Protein coding	CCDS48740	Q8BZT7	TSL:1 GENCODE basic APPRIS P1
Pla2g3-201	ENSMUST00000044682.6	2608	446aa	Nonsense mediated decay	-	Q8BV23	TSL:2
Pla2g3-203	ENSMUST00000151860.1	2869	No protein	Retained intron	-	-	TSL:5

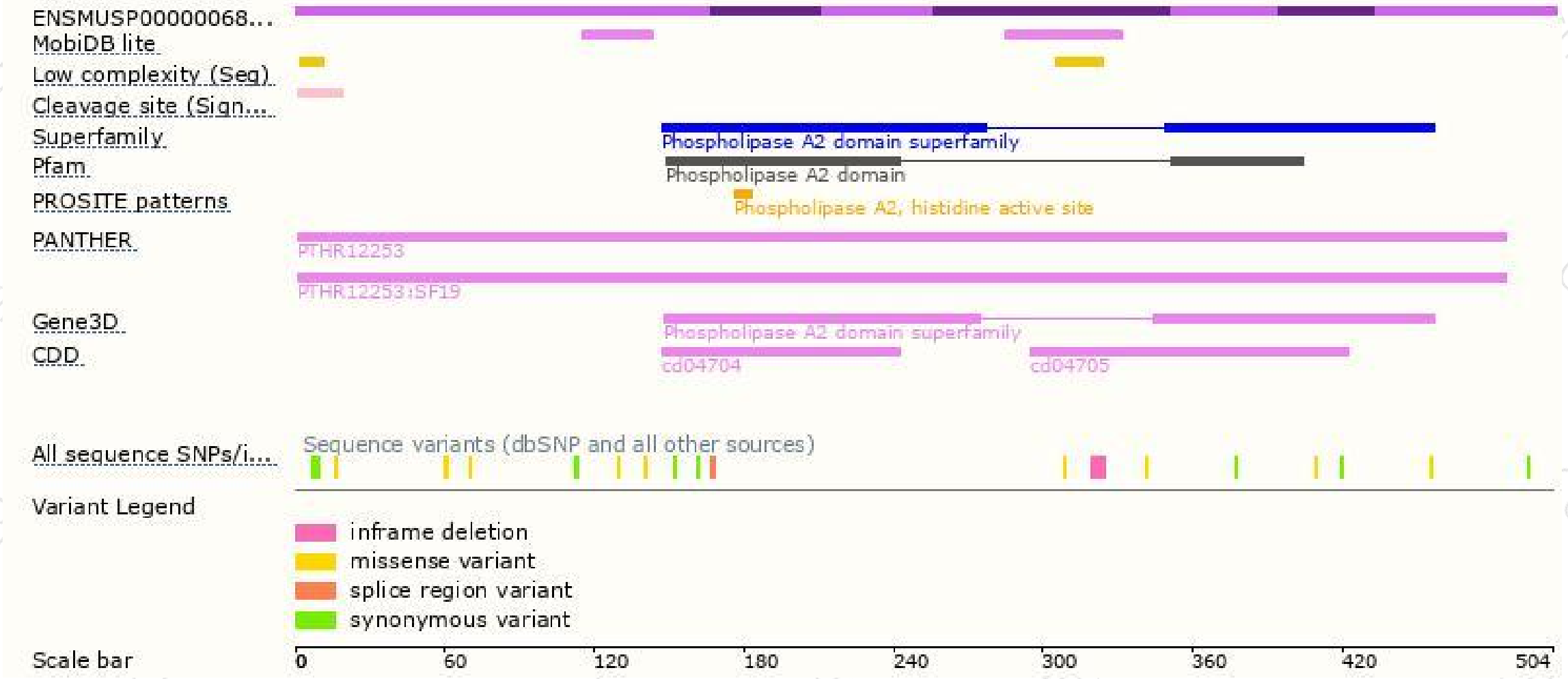
The strategy is based on the design of *Pla2g3-202* transcript,the transcription is shown below:



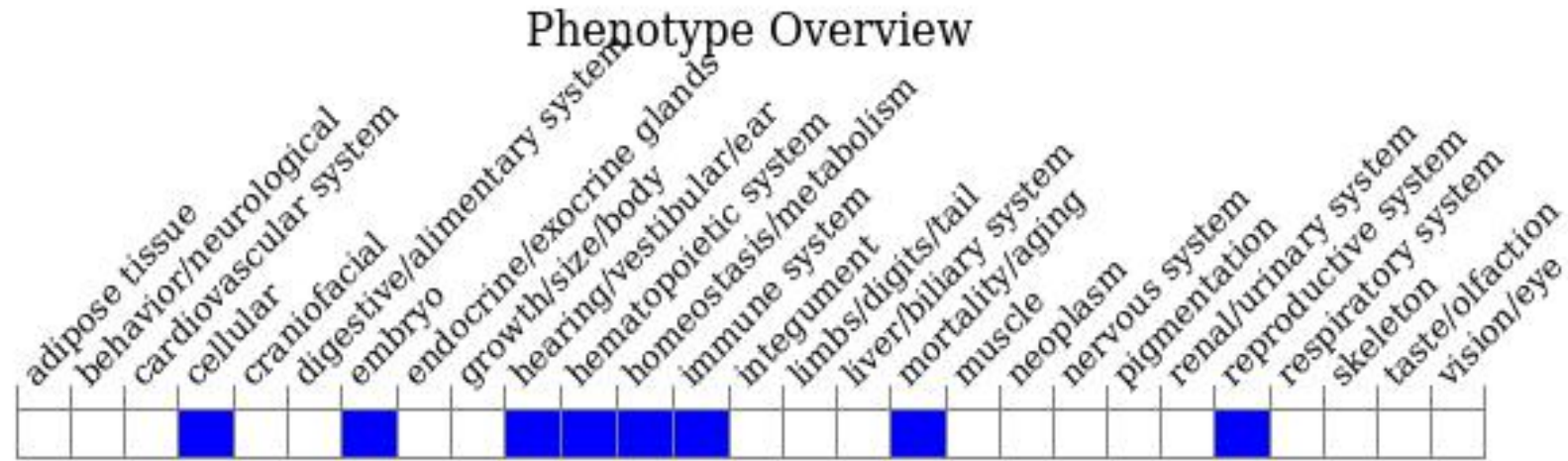
Genomic location distribution



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 mice have reduced male fertility with smaller litter size and decreased susceptibility to IgE antigen-induced passive systemic and cutaneous anaphylaxis due to impaired mast cell maturation, degranulation and histamine release.

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

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