Pla2g12a Cas9-CKO Strategy

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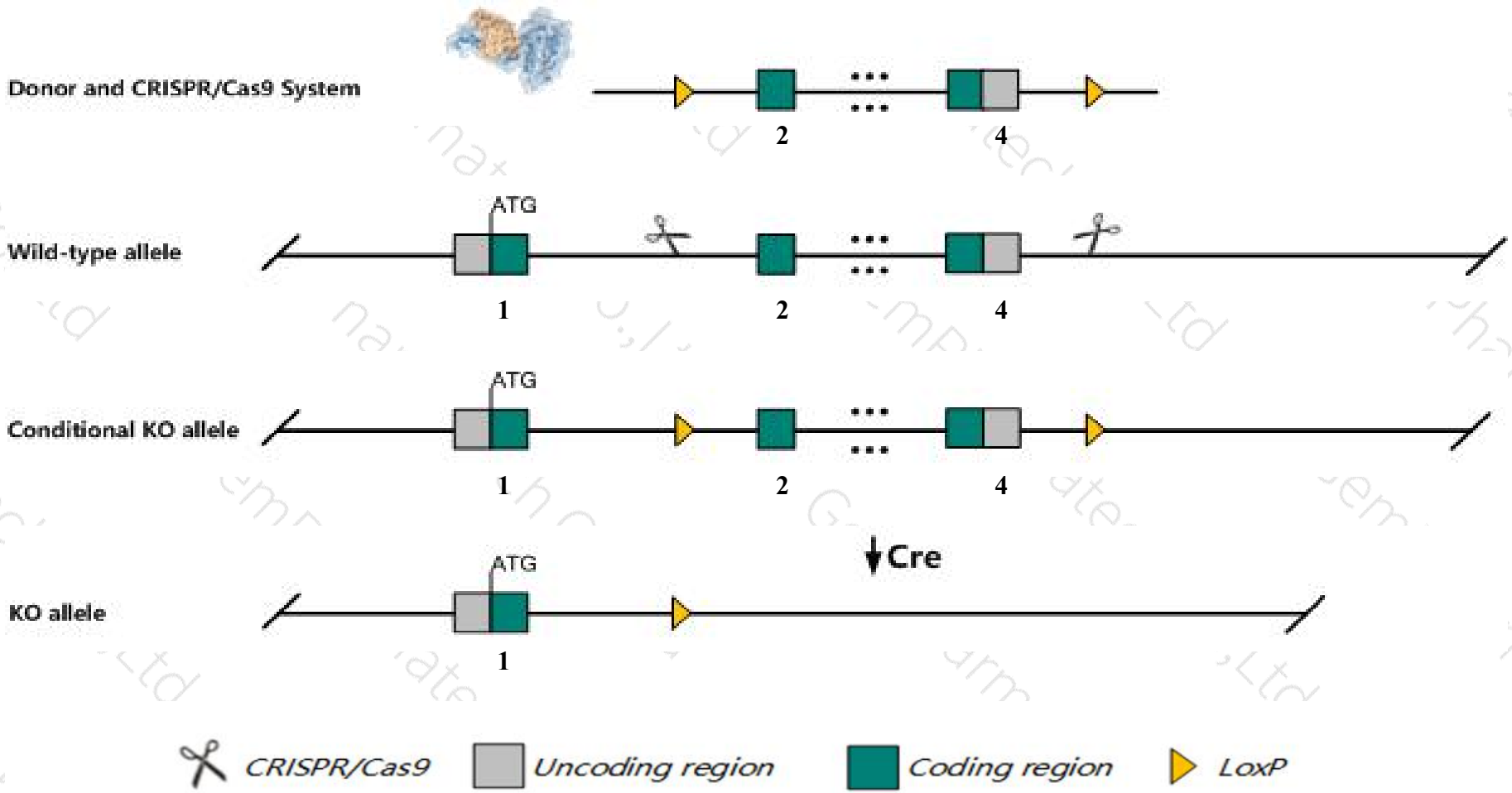
Project Overview

Project Name	***Pla2g12a***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pla2g12a* gene. The schematic diagram is as follows:



Technical routes

- The *Pla2g12a* gene has 4 transcripts. According to the structure of *Pla2g12a* gene, exon2-exon4 of *Pla2g12a-201* (ENSMUST00000029629.14) transcript is recommended as the knockout region.The region contains most coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Pla2g12a* gene. The brief process is as follows:gRNA was transcribed in vitro, donor was constructed.Cas9, gRNA 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.

Notice

- Some amino acids will remain at the N-terminus and some functions may be retained.
- The *Pla2g12a* gene is located on the Chr3. 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）

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Pla2g12a phospholipase A2, group XIIA [Mus musculus (house mouse)]

Gene ID: 66350, updated on 13-Mar-2020

Summary

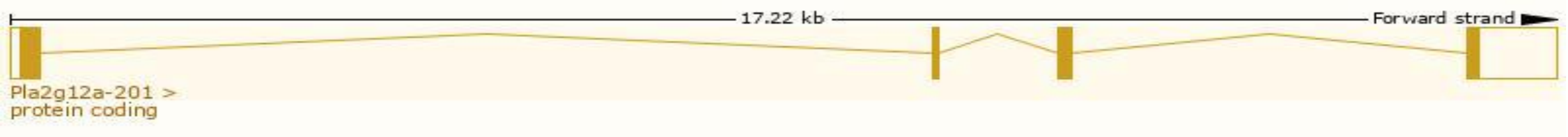
Official Symbol	Pla2g12a provided by MGI
Official Full Name	phospholipase A2, group XIIA provided by MGI
Primary source	MGI:MGI:1913600
See related	Ensembl:ENSMUSG00000027999
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2310004B05Rik, GXII, GXII-1, GXII-1-PLA2, Pla2g12, Rossy, mGXII-1
Expression	Ubiquitous expression in genital fat pad adult (RPKM 52.5), ovary adult (RPKM 43.2) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

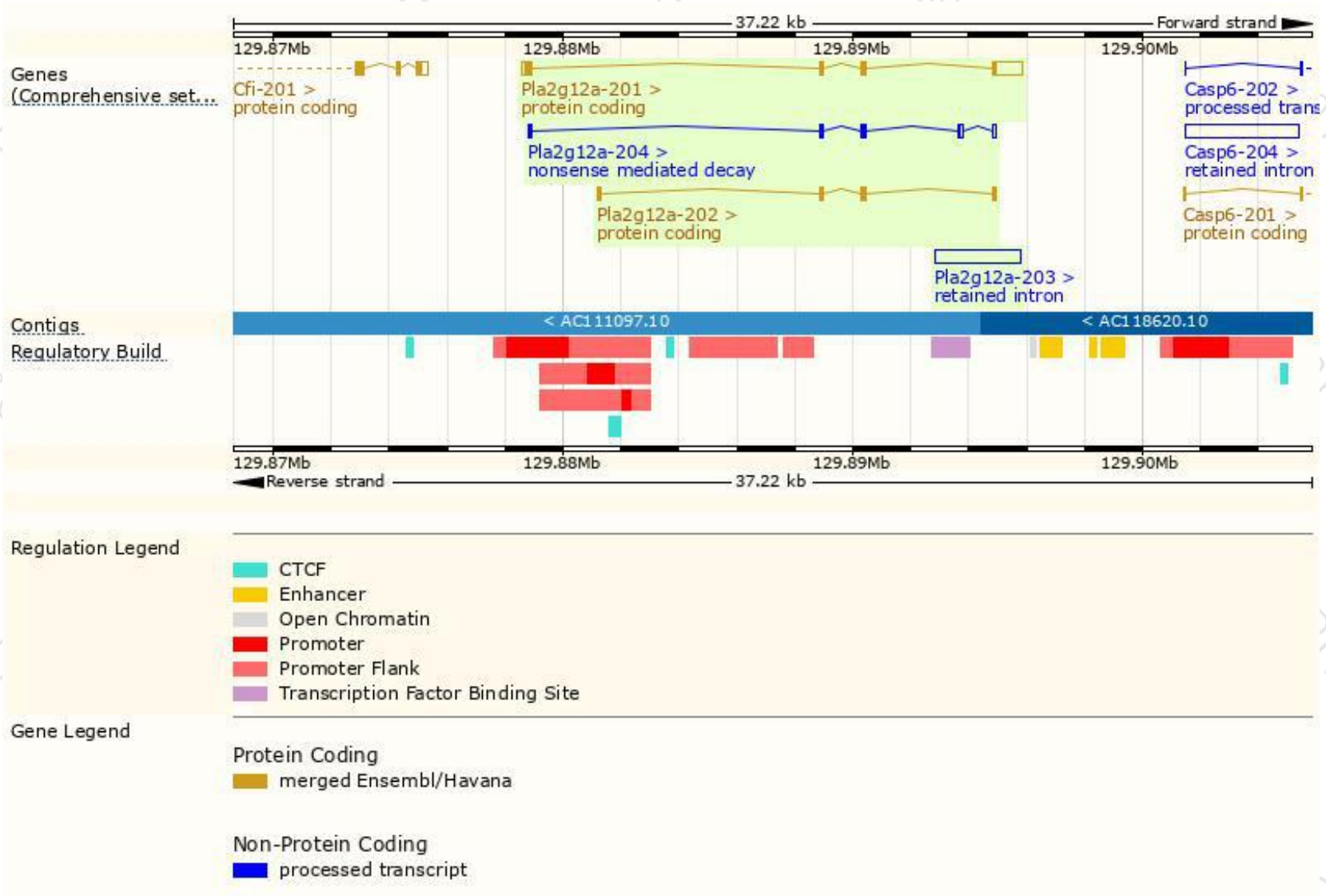
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pla2g12a-201	ENSMUST00000029629.14	1561	192aa	Protein coding	CCDS17836	Q9EPR2	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1
Pla2g12a-202	ENSMUST00000061165.8	476	153aa	Protein coding	CCDS17837	Q9EPR2	TSL:1 GENCODE basic
Pla2g12a-204	ENSMUST00000196838.4	625	129aa	Nonsense mediated decay	-	A0A0G2JH03	CDS 5' incomplete TSL:3
Pla2g12a-203	ENSMUST00000196736.1	2992	No protein	Retained intron	-	-	TSL:NA

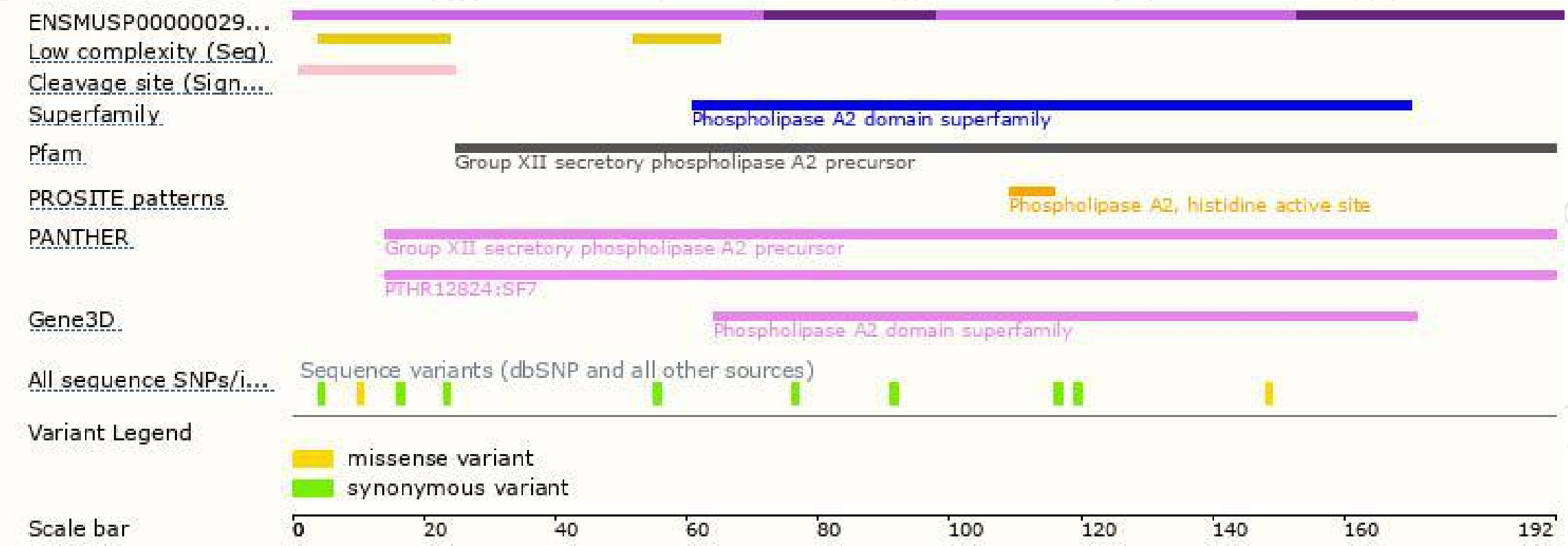
The strategy is based on the design of *Pla2g12a-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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