

Pls3 Cas9-CKO Strategy

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Reviewer:

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Design Date:

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Project Overview

Project Name

Pls3

Project type

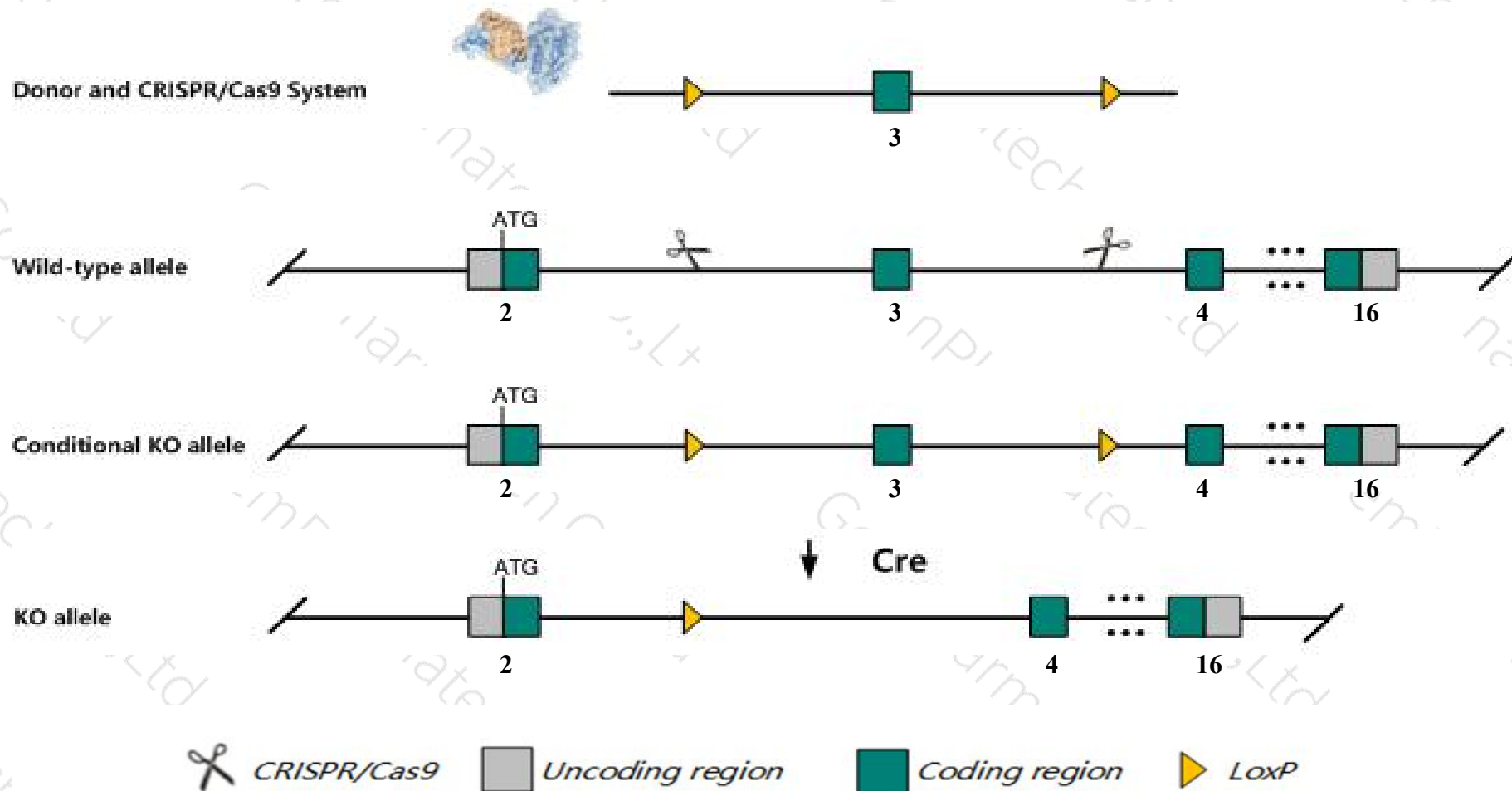
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pls3* gene. The schematic diagram is as follows:



Technical routes

- The *Pls3* gene has 6 transcripts. According to the structure of *Pls3* gene, exon3 of *Pls3-201* (ENSMUST00000033547.13) transcript is recommended as the knockout region. The region contains 164bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Pls3* gene. The brief process is as follows: CRISPR/Cas9 system 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.

- According to the existing MGI data, Mice homozygous or hemizygous for a knock-out allele exhibit osteoporotic phenotypes with increased bone resorption.
- The *Pls3* gene is located on the ChrX. 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.

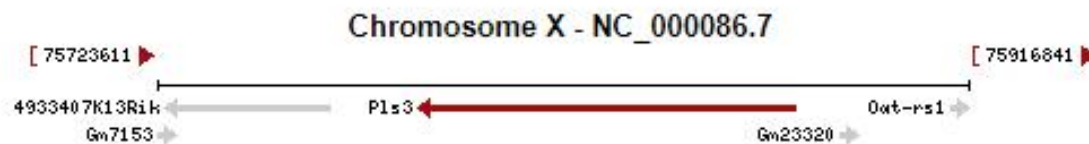
Gene information (NCBI)

Pls3 plastin 3 (T-isoform) [*Mus musculus* (house mouse)]

Gene ID: 102866, updated on 24-Dec-2019

Summary

Official Symbol	Pls3 provided by MGI
Official Full Name	plastin 3 (T-isoform) provided by MGI
Primary source	MGI:MGI:104807
See related	Ensembl:ENSMUSG00000016382
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	AI115446; AL024105
Expression	Broad expression in genital fat pad adult (RPKM 39.2), bladder adult (RPKM 31.7) and 17 other tissues See more
Orthologs	human all

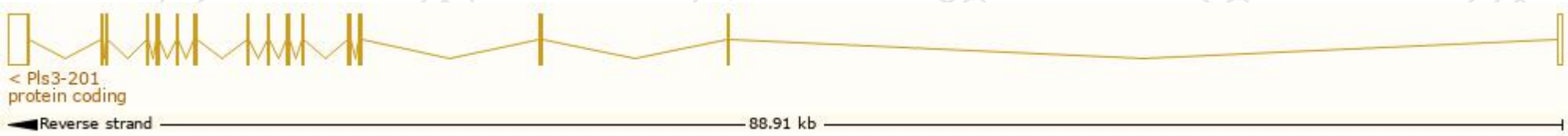


Transcript information (Ensembl)

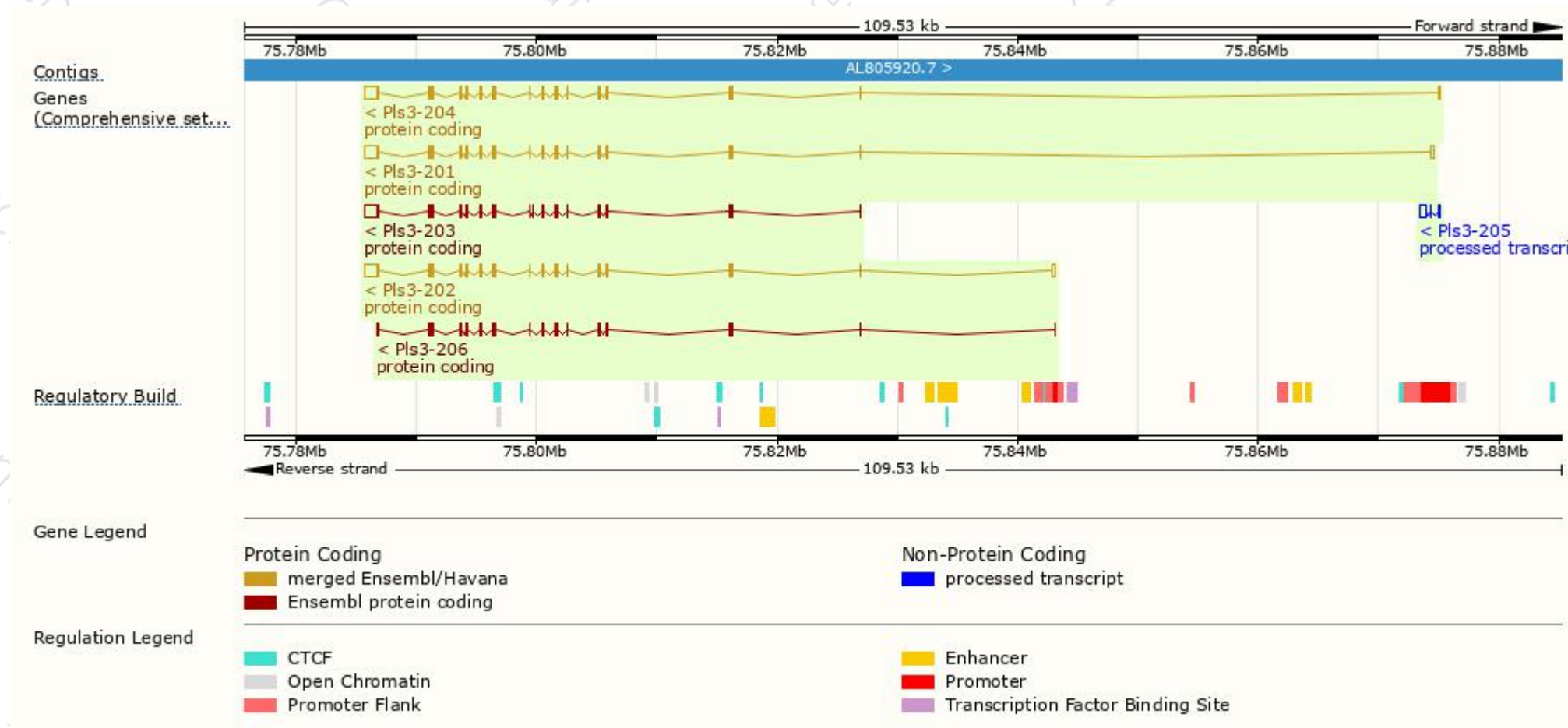
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pls3-201	ENSMUST00000033547.13	3242	630aa	Protein coding	CCDS30243	Q99K51	TSL:1 GENCODE basic APPRIS P1
Pls3-202	ENSMUST00000114057.7	3160	630aa	Protein coding	CCDS30243	Q99K51	TSL:1 GENCODE basic APPRIS P1
Pls3-204	ENSMUST00000114059.9	3149	630aa	Protein coding	CCDS30243	Q99K51	TSL:1 GENCODE basic APPRIS P1
Pls3-203	ENSMUST00000114058.7	3032	639aa	Protein coding	CCDS85786	B1AX58	TSL:5 GENCODE basic
Pls3-206	ENSMUST00000137192.1	2000	629aa	Protein coding	-	A0A1C7CYV0	CDS 3' incomplete TSL:5
Pls3-205	ENSMUST00000126599.1	656	No protein	Processed transcript	-	-	TSL:3

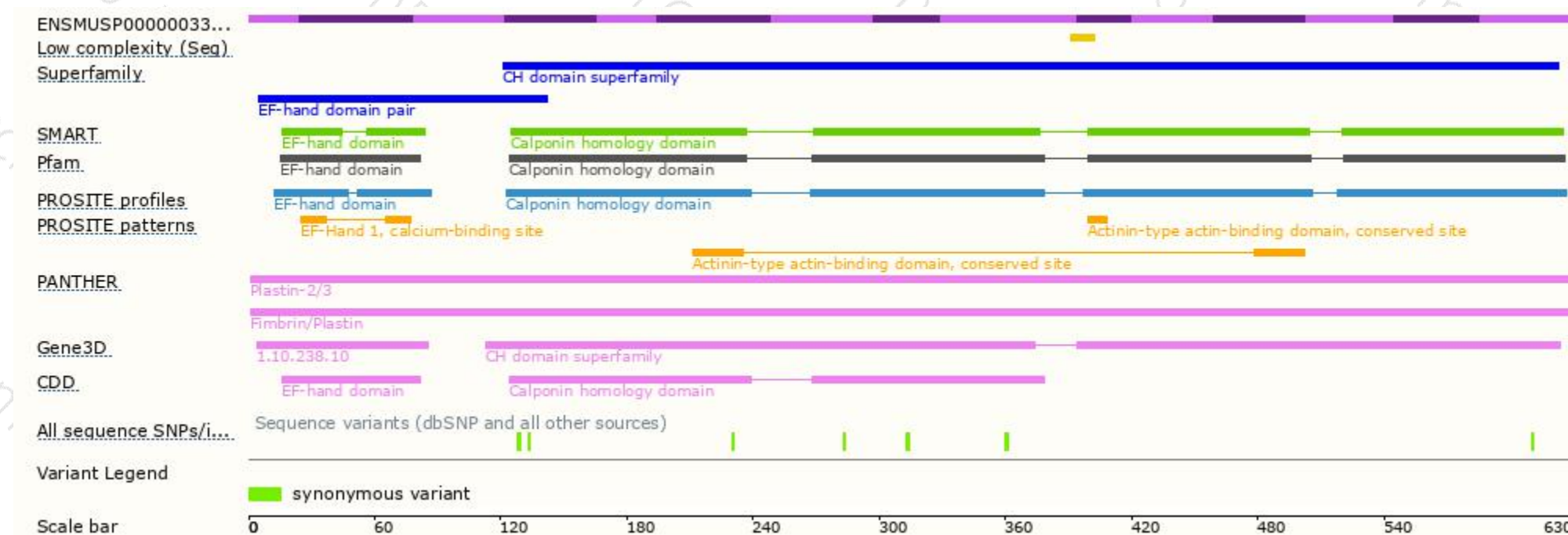
The strategy is based on the design of *Pls3-201* transcript,The transcription is shown below



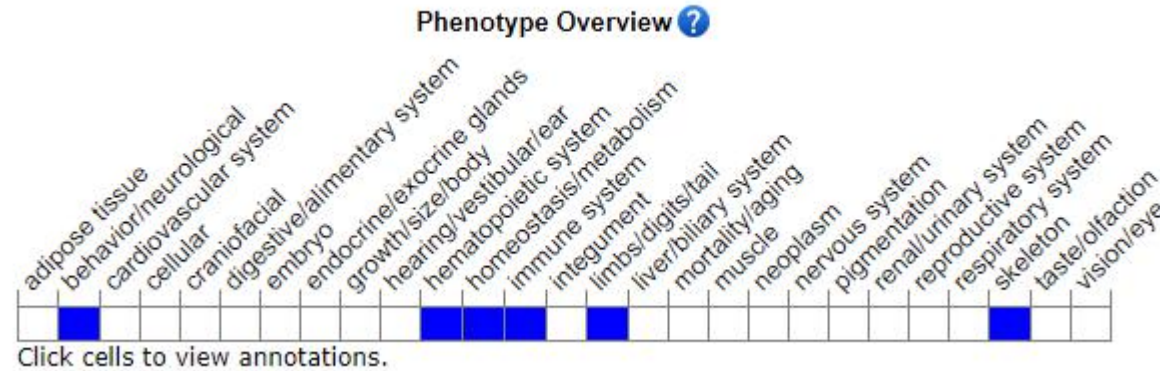
Genomic location distribution



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 or hemizygous for a knock-out allele exhibit osteoporotic phenotypes with increased bone resorption.

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

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